TOSHIBA

FILE NO. 330-200011

SERVICE MANUAL

DLP DATA PROJECTOR

TDP-P4

TDP-P4

PRINTED IN JAPAN, Apr., 2001 Ⓕ

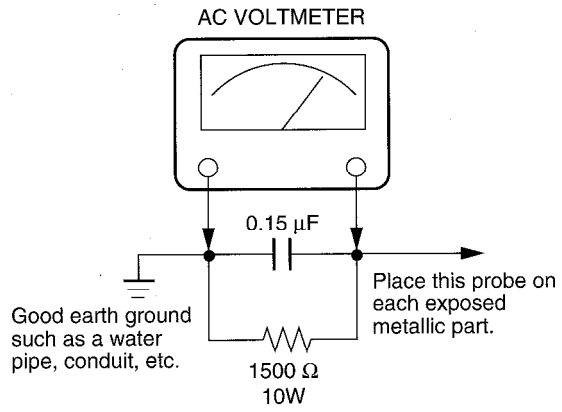
SAFETY PRECAUTION

WARNING: Service should not be attempted by anyone unfamiliar with the necessary precautions on this projector. The following are the necessary precautions to be observed before servicing this chassis.

1 . An isolation Transformer should be connected in the power line between the projector and the AC line before any service is performed on the projector.

2. When replacing a chassis in the cabinet, always be certain that all the protective devices are put back in place, such as; non-metallic control knobs, insulating covers, shields, isolation resistor-capacitor network etc.

3. Before returning the set to the customer, always perform an AC leakage current check on the exposed metallic parts of the cabinet, such as terminals, screwheads, metal overlays, control shafts etc. to be sure the set is safe to operate without danger of electrical shock. Plug the AC line cord directly into a AC outlet (do not use a line isolation transformer during this check). Use an AC voltmeter having 5000ohm per volt or more sensitivity in the following manner: Connect a1500ohm 10W resistor, paralleled by a 0.15 µF, AC type capacitor, between a known good earth ground (water pipe, conduit, etc.) and the exposed metallic parts, one at a time. Measure the AC voltage across the combination of 1500ohm resistor and 0.15 µF capacitor. Reverse the AC plug at the AC outlet and repeat AC voltage measurements for each exposed metallic part. Voltage measured must not exceed 5.25V(rms). This corresponds to 3.5 mA(AC). Any value exceeding this limit constitutes a potential shock hazard and must be corrected immediately.


AC VOLTMETER
0.15 µF
Good earth ground such as a water pipe, conduit, etc.
Place this probe on each exposed metallic part.
1500 Ω
10W

PRODUCT SAFETY NOTICE

Many electrical and mechanical parts in this chassis have special safety-related characteristics. These characteristics are often passed unnoticed by a visual inspection and the protection afforded by them cannot necessarily be obtained by using replacement components rated for higher voltage, wattage, etc. Replacement parts which have these special safety characteristics are identified in this manual and its supplements; electrical components having such features are identified by the international hazard symbols on the schematic diagram and the parts list.

Before replacing any of these components, read the parts list in this manual carefully. The use of substitute replacement parts which do not have the same safety characteristics as specified in the parts list may create shock, fire or other hazards.

ULTRAVIOLET DANGER IN SERVICE MODE

Eye damage may result from directly viewing the light produced by the lamp used in this product. Always turn off lamp before opening this cover. Ultraviolet radiation eye protection required during servicing.

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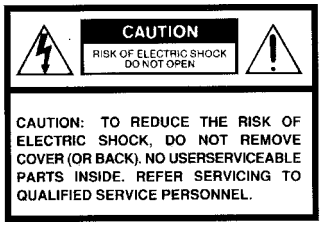
SAFETY PRECAUTIONS


CAUTION
RISK OF ELECTRIC SHOCK
DO NOT OPEN
CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE COVER (OR BACK). NO USERSERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

WARNING: TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE. DANGEROUS HIGH VOLTAGES ARE PRESENT INSIDETHE ENCLOSURE. DO NOT OPEN THE CABINET. REFER SERVICING TO QUALIRED PERSONNEL ONLY.

CAUTION: Laser beam is emitted when the laser button of the remote control is pressed. Do not look from the front of the remote control. Do not face toward a person or to a mirror.

FCC Radio Frequency Interference Statement

Note: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiates radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

WARNING: Changes or modifications made to this equipment, not expressly approved by Toshiba, or parties authorized by Toshiba, could void the user's authority to operate the equipment.

Notice: This Class A digital apparatus complies with Canadian ICES-003.
Cet appareil numérique de la classe A est conforme à la norme NMB-003 du Canada.

IMPORTANT PRECAUTIONS

Save Original Packing Materials

The original shipping carton and packing materials will come in handy if you ever have to ship your LCD projector. For maximum protection, repack the set as it was originally packed at the factory.

Avoid Volatile Liquid

Do not use volatile liquids, such as an insect spray, near the unit. Do not leave rubber or plastic products touching the unit for a long time. They will mar the finish.

Moisture Condensation

Never operate this unit immediately after moving it from a cold location to a warm location. When the unit is exposed to such a change in temperature, moisture may condense on the crucial internal parts. To prevent the unit from possible damage, do not use the unit for at least 2 hours when there is an extreme or sudden change in temperature.

In the spaces provided below, record the Model and Serial No. located at the rear of your LCD projector.

Mode No._____ Serial No. _____

Retain this information for future reference.

IMPORTANT SAFETY INSTRUCTIONS

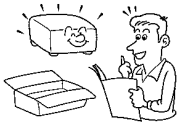
CAUTION: PLEASE READ AND OBSERVE ALLWARNINGS AND INSTRUCTIONS GIVEN IN THIS OWNER'S MANUAL AND THOSE MARKED ON THE UNIT. RETAIN THIS BOOKLET FOR FUTURE REFERENCE.

This set has been designed and manufactured to assure personal safety. Improper use can result in electric shock or fire hazard. The safeguards incorporated in this unit will protect you if you observe the following procedures for installation, use and servicing. This unit is fully transistorized and does not contain any parts that can be repaired by the user.

DO NOT REMOVE THE CABINET COVER, OR YOU MAY BE EXPOSED TO DANGEROUS VOLTAGE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL ONLY.

1. Read Owner's Manual

After unpacking this product, read the owner's manual carefully, and follow all the operating and other instructions.



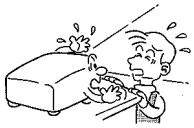
2. Power Sources

This product should be operated only from the type of power source indicated on the marking label. If you are not sure of the type of power supply to your home, consult your product dealer or local power company.

For products intended to operate from battery power, or other sources, refer to the operating instructions.

3. Source of Light

Do not look into the lens while the lamp is on. The strong light from the lamp may cause damage to your eyes or sight.



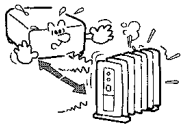
4. Ventilation

Openings in the cabinet are provided for ventilation and to ensure reliable operation of the product and to protect it from overheating, and these openings must not be blocked or covered. The openings should never be blocked by placing the product on a bed, sofa, rug or other similar surface. This product should not be placed in a built-in installation such as a bookcase or rack unless proper ventilation is provided or the manufacturer's instructions have been adhered to.

IMPORTANT SAFETY INSTRUCTIONS

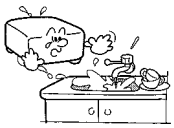
5. Heat

The product should be situated away from heat sources such as radiators heat registers, stoves, or other products (including amplifiers) that produce heat.



6. Water and Moisture

Do not use this product near water - for example, near a bath tub, wash bowl, kitchen sink, or laundry tub; in a wet basement; or near a swimming pool and the like .



7. Cleaning

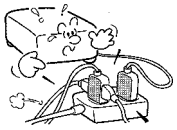
Unplug this product from the wall outlet before cleaning. Do not use liquid cleaners or aerosol cleaners. Use a damp cloth for cleaning.

8. Power-Cord Protection

Power-supply cords should be routed so that they are not likely to be walked on or pinched by items placed upon or against them, paying particular attention to cords at plugs, convenience receptacles, and the point where they exit from the product.

9. Overloading

Do not overload wall outlets; extension cords, or integral convenience receptacles as this can result in a risk of fire or electric shock.



10. Lightning

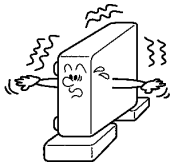
For added protection for this product during storm, or when it is left unattended and unused for long periods of time, unplug it from the wall outlet.

This will prevent damage to the product due to lightning and power-line surges.

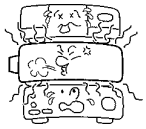
IMPORTANT SAFETY INSTRUCTIONS

11. Object and Liquid Entry
Never push objects of any kind into this product through openings as they may touch dangerous voltage points or short-out parts that could result in a fire or electric shock. Never spill liquid of any kind on the product.

12. Do not place the product vertically
Do not use the product in the upright position to project the pictures at the ceiling, or any other vertical positions. It may fall down and dangerous.



13. Stack Inhibited
Do not stack other equipment on this product or do not place this product on the other equipment.
Top and bottom plates of this product develops heat and may give some undesirable damage to other unit.



14. Attachments
Do not use attachments not recommended by the product manufacturer as they may cause hazards.

15. Accessories
Do not place this product on an unstable cart, stand, tripod, bracket, or table. The product may fall, causing serious injury to a child or adult, and serious damage to the product. Use only with a cart, stand, tripod, bracket, or table recommended by the manufacturer, or sold with the product. Any mounting of the product should follow the manufacturer's instructions and should use a mounting accessory recommended by the manufacturer.
A product and cart combination should be moved with care. Quick stops, excessive force, and uneven surfaces may cause the product and cart combination to overturn.

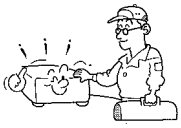
IMPORTANT SAFETY INSTRUCTIONS

16. Damage Requiring Service
Unplug this product from the wall outlet and refer servicing to qualified service personnel under the following conditions:
a) When the power-supply cord or plug is damaged.
b) If liquid has been spilled, or objects have fallen into the product.
c) If the product has been exposed to rain or water.
d) If the product does not operate normally by following the operating instructions. Adjust only those controls that are covered by the operating instructions as an improper adjustment of other controls may result in damage and will often require extensive work by a qualified technician to restore the product to its normal operation.
e) If the product has been dropped or damaged in any way.
f) When the product exhibits a distinct change in performance - this indicates a need for service.

17. Servicing
Do not attempt to service this product yourself as opening or removing covers may expose you to dangerous voltage or other hazards. Refer all servicing to qualified service personnel.

18. Replacement Parts
When replacement parts are required, be sure the service technician has used replacement parts specified by the manufacturer or have the same characteristics as the original part. Unauthorized substitutions may result in fire, electric shock, or other hazards. (Replacement of the lamp only should be made by users.)

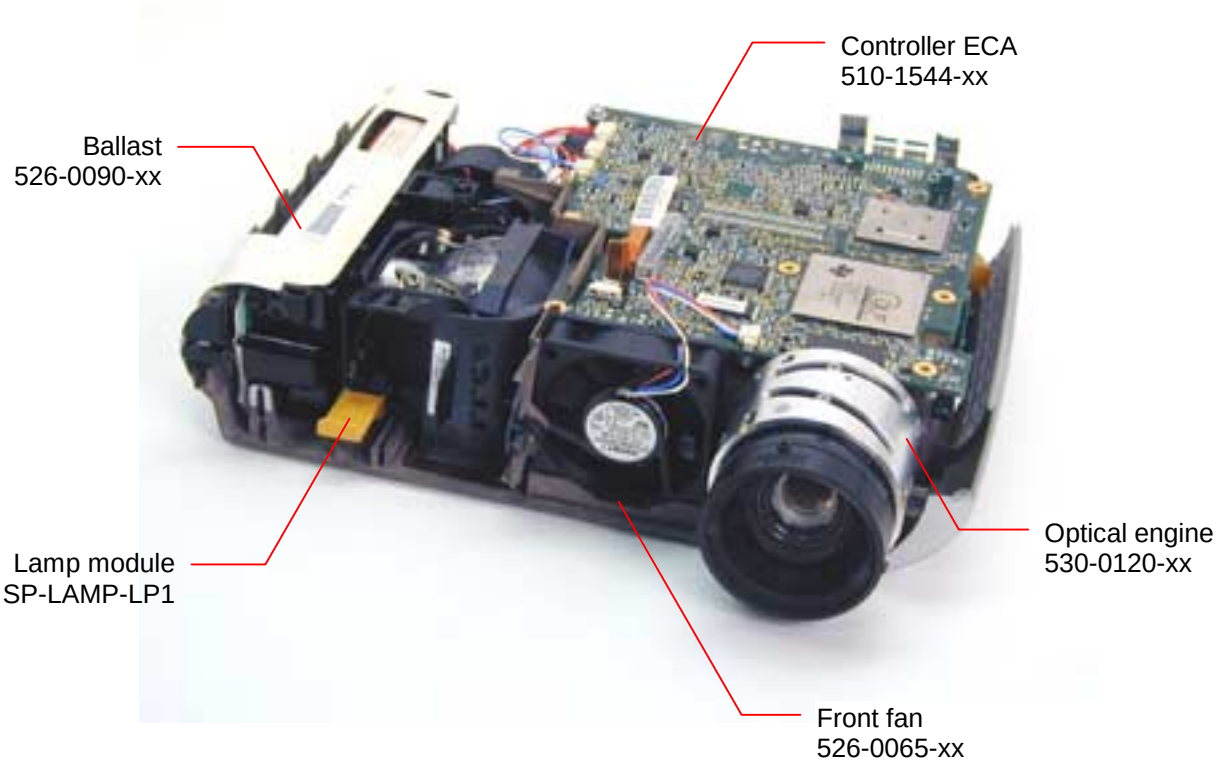
19. Safety Check
Upon completion of any service or repairs to this product, ask the service technician to perform safety checks to determine that the product is in proper operating condition.

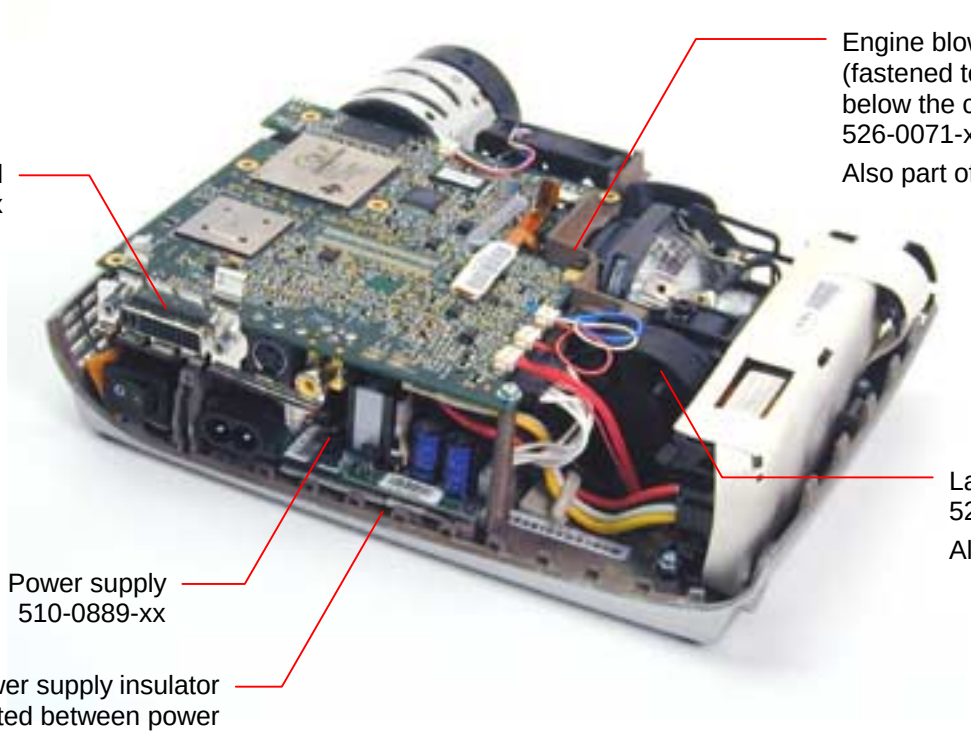


Parts Replacement

Major Part Locations

The top illustration shows the parts from the front of the projector. The illustration on the next page shows the parts visible from the rear of the projector. To see exploded views of the case parts, major components and optical engine, see page 96.




Engine blower
(fastened to the optical engine
below the controller ECA)
526-0071-xx
Also part of optical engine
I/O EMI shield
330-0700-xx
Lamp fan
526-0076-xx
Also part of optical engine
Power supply
510-0889-xx
Power supply insulator
(located between power
supply and bottom case.)
510-0889-xx

Focus and zoom rings

The focus ring (505-0874-xx) fits around the front of the projection lens. The zoom ring (505-0921-xx) fits behind the focus ring. The lens cap (505-0713-xx) snaps onto the focus ring.

The focus ring snaps onto the front of the lens, while the zoom ring secures to the lens barrel with three M2x3 Phillips screws with star washers.

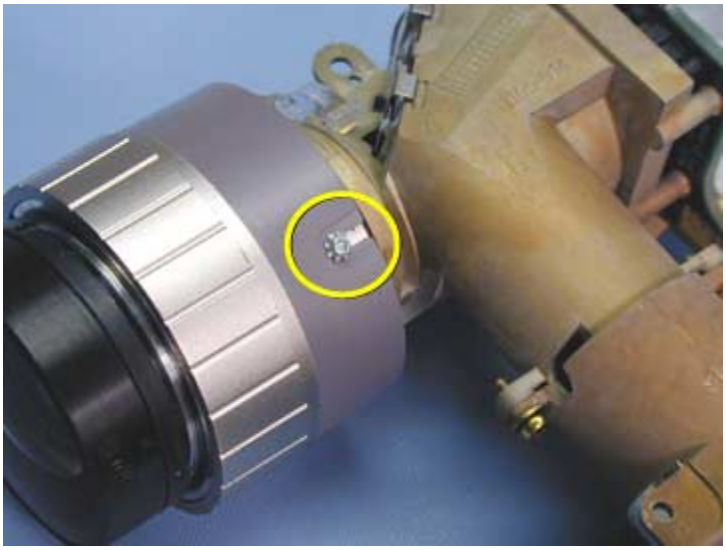
1 Pull the focus ring away from the front of the projection lens.

2 To access the zoom ring, remove the optical engine (see page 45)

3 Turn the optical engine upside down on a soft surface.

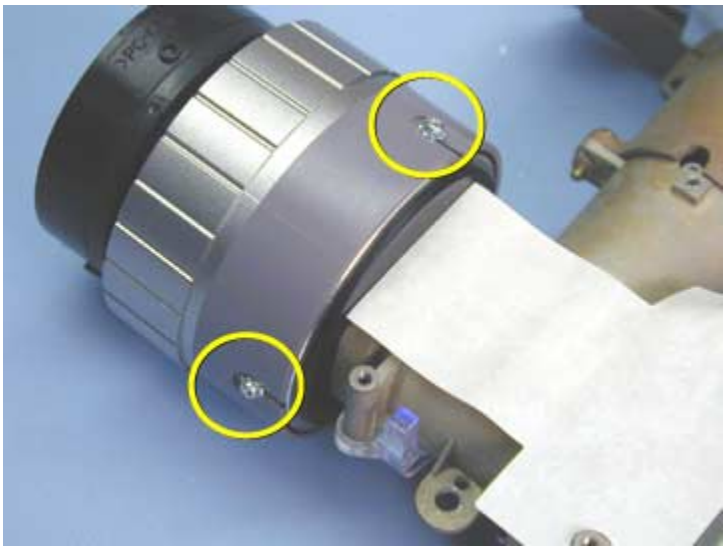
CAUTION The optical engine in the TDP-P4 has an exposed glass color wheel. Take extreme care when handling the engine.

4 Remove the M2x3 screw from the zoom ring.

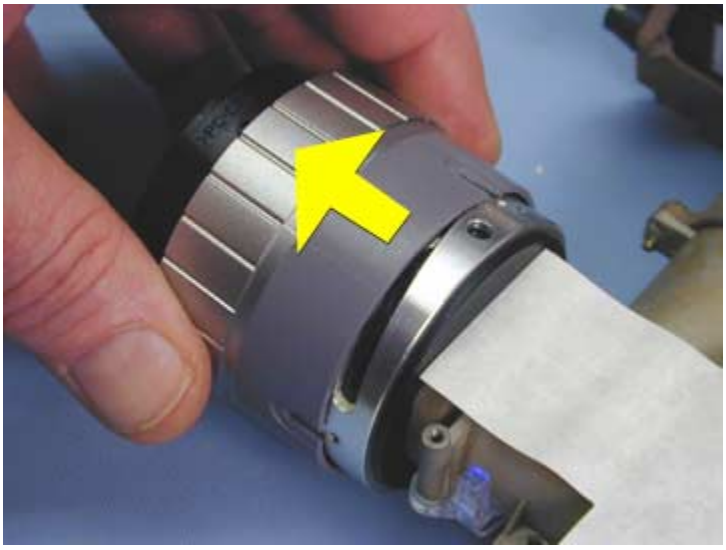


5 Turn the engine right side up.

6 Remove the two M2x3 screws.



7 Pull the zoom ring off of the lens barrel.



Assembly Notes

- Fasten the zoom ring to the side of the lens barrel with the three M2x3 screws with star washers. Tighten the screws to 2 in.-lbs. (.226 N m).
- Snap the focus ring around the front of the lens, making sure that the three recesses in the focus ring engage the three tabs on the sides of the lens.

Front bezel

The front bezel (505-0814-xx) covers the front of the projector and helps secure the top case to the bottom case. Hooks on the front bezel engage pins on the top and bottom cases to attach the bezel to the front of the projector. A spring-loaded latch on the bottom case locks the bezel in position.

NOTE The front bezel contains a plunger that engages the interlock switch on the ballast assembly. The lamp will not strike with the front bezel removed unless you defeat the interlock switch. See page 91 for information about powering up the projector with the top removed.

1. Place the projector on its side to release the front bezel latch. Use your finger or a screwdriver to slide the latch tab toward the rear of the projector. Hold the latch in position and slide the bezel slightly toward the side of the projector opposite the lens.

2 Lift the front bezel off of the projector.

Assembly Notes

- When you replace the front bezel, make sure that the hooks on the bezel properly engage the pins on the top and bottom cases. Slide the bezel toward the lens until the latch locks the bezel in position.

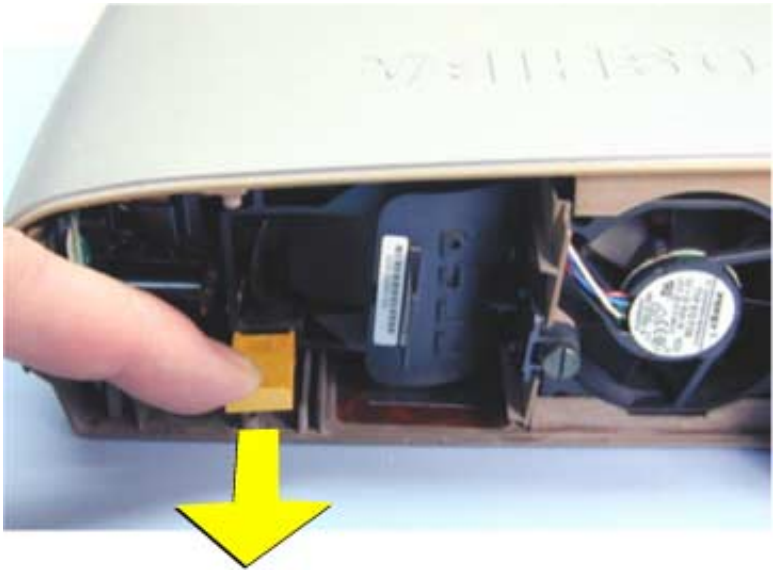
Lamp module

The lamp module (SP-LAMP-LP1) is located at the front of the projector between the ballast and the optical engine. The lamp module fastens to the optical engine with one captive screw. After you replace the lamp module, you should reset the lamp hour counter. (see page 61)

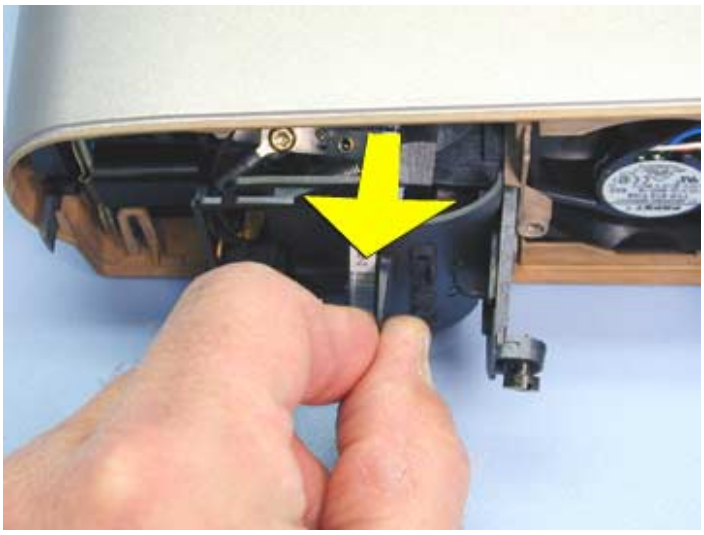
WARNING Allow the projector to cool before removing the lamp module. The lamp module becomes very hot when the projector is in use. Avoid touching any portion of the lamp module that is located in the light path. Oils from your fingers can cause smudges and uneven heating of lamp surfaces, resulting in decreased image quality and premature lamp failure. If the lamp is ruptured or the lamp module is cracked or damaged, be careful of quartz or glass fragments that could cause personal injury.

1. Remove the front bezel. (see page 11)
2. Use a flat-blade screwdriver to loosen the captive screw that fastens the lamp module to the optical engine. You don't need to remove the screw.

3. Pull the release latch at the lower left side of the lamp module outward to disengage the connection between the lamp module and the ballast.

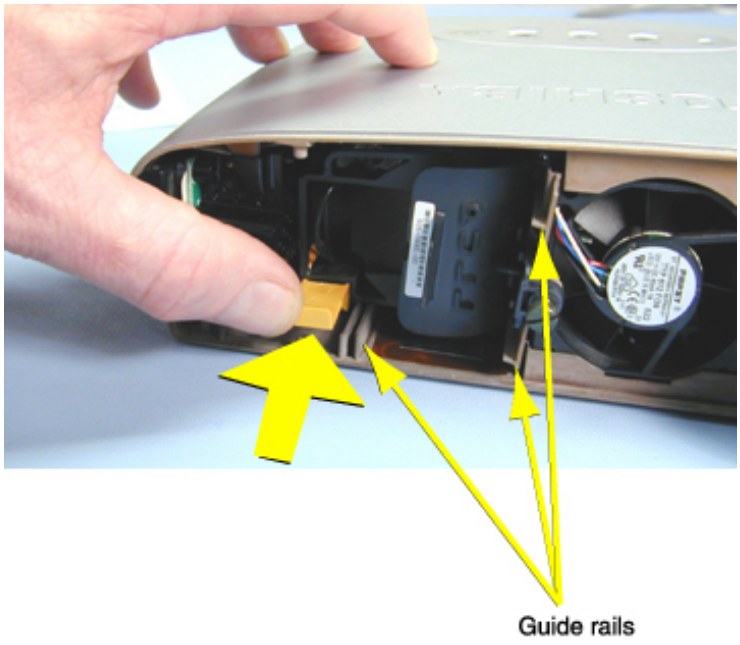


4 Grasp the handle on the lamp module and pull the module out of the lamp housing.



Assembly Notes

- Slide the lamp module in between the three guide rails on the optical engine. Then press the module into place.



- Push the release latch at the lower left side of the lamp module inward to engage the connection between the lamp module and the ballast.
- Tighten the captive screw to 3 in.-lbs. (.339 N m).

Rear Bezel

The rear bezel (505-0901-xx) covers the rear of the projector and fits between the top case and the bottom case. It fastens to the projector with one M2.5x6 Torx screw.

1 Use a T-8 Torx driver to remove the M2.5x6 Torx screw from the rear bezel.

2 Gently pry the rear bezel away from the projector.

You may need to use a small screwdriver. Do not pry around the edge of the bezel. Instead, reach in between the power button and the bezel.

Assembly Notes

- Replace the right side of the bezel first. Then press the left side into place. The bezel should fit flush with the top and bottom cases.
- Fasten the bezel to the projector with the M2.5x6 screw. Tighten the screws to 3 in.-lbs. (.338 N m)

Rubber Feet

The rubber feet (328-0128-xx, two required) are located on the bottom case at the bottom rear of the projector.

To replace a rubber foot, peel the protective paper off the bottom of the foot. Then press the foot into the recess in the bottom case. If you need to remove a portion of an old rubber foot, gently pry it away from the bottom case.

Top Case

The top case (505-0811-xx) encloses the top half of the projector. It includes the IR lightpipe that transfers IR signals from the remote control to the IR receiver on the controller ECA.

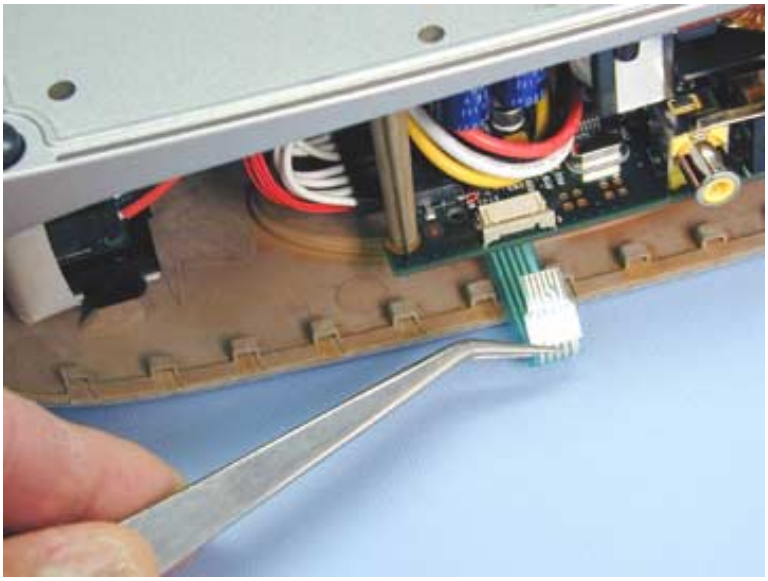
When you replace the top case, you must first remove the keypad from the old case, then install it in the new top case.

1. Remove the following items:

   Front bezel (see page 11)

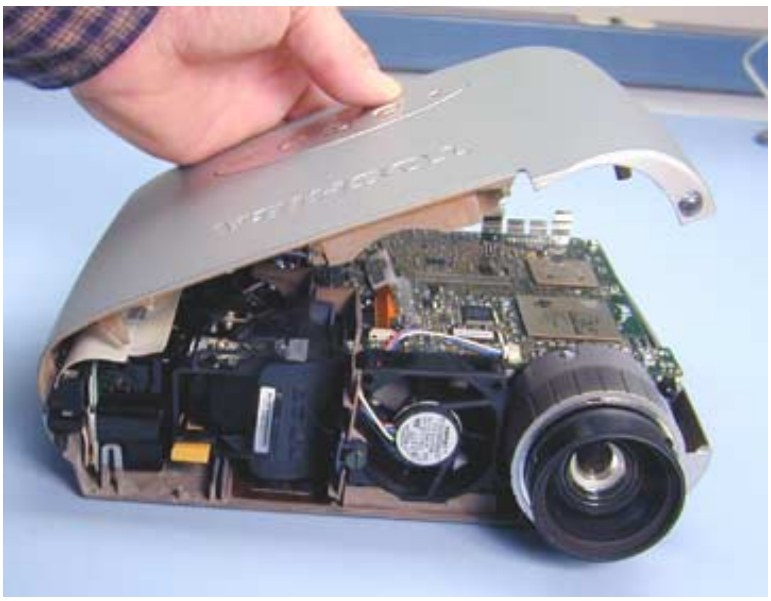
   Rear bezel (see page 15)

2. Place the unit upside-down on the bench and detach the keypad cable from its ZIF connector on the controller ECA. The connector is adjacent to the I/O panel.



3 Use a T-8 Torx driver to remove the M2.5x8 Torx screw that secures the top case to the projector.

4 Carefully turn the unit over and lift the top case away from the projector.



If you are replacing the top case, remove the keypad. (see page 21)

Assembly Notes

- Small tabs at the hinge side of the top case engage holes on the bottom case. Make sure that the top case aligns properly with the bottom case as you close the projector.

- Ensure that the keypad cable is properly routed and securely fastened to its ZIF connector on the controller ECA. The silver contacts at the end of the cable should face toward the top case in the ZIF connector. Check the ZIF connector latch after you insert the cable to make sure it is locked.
- Secure the top case to the bottom case with the M2.5x8 Torx screw. Tighten the screw to 3 in.-lbs. (.339 N m).

Keypad

The keypad (526-0089-xx) fastens to the inside of the top case. The keypad cable, part of the keypad, connects the keypad with the controller ECA.

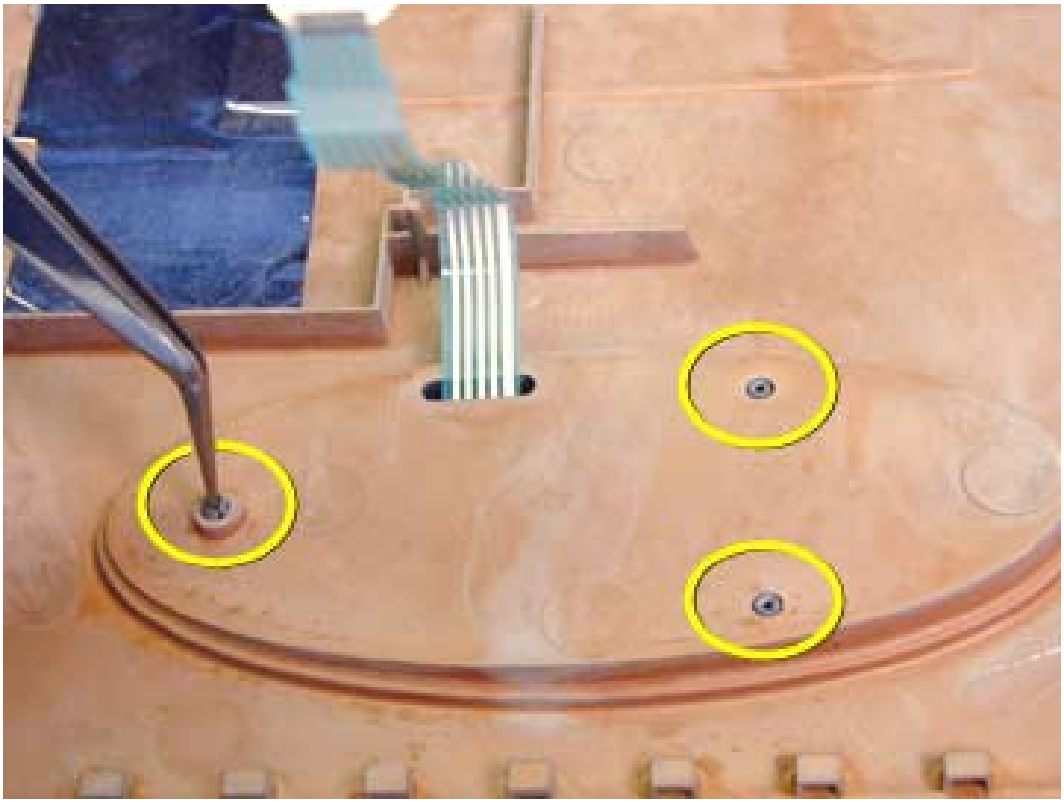
1 Remove the following items:

Front bezel (see page 11)

Rear bezel (see page 15)

Top case (see page 18)

2 On the inside of the top case, use tweezers or small needle nose pliers to press out the three tabs that hold the keypad to the top case. Make sure to hold the keypad in from the other side when you release the tabs.



3 From the outside of the top case, lift the keypad up, allowing the keypad cable to slide through and out of the slot.

Assembly Notes

- Make sure to route the keypad through the slot in the top case and that the cable folds at 90 degrees to extend from the rear of the top case.
- Place the keypad into its recess in the top case, being careful to avoid kinking the cable. Then gently press the keypad into place. Take care not to bend the tabs on the back of the keypad.

I/O EMI Shield

The I/O shield (330-0700-xx) fastens to the M1 video input connector at the rear of the controller ECA. Contact fingers on the shield drain electro-magnetic interference away from M1 or video source signal connections to ground.

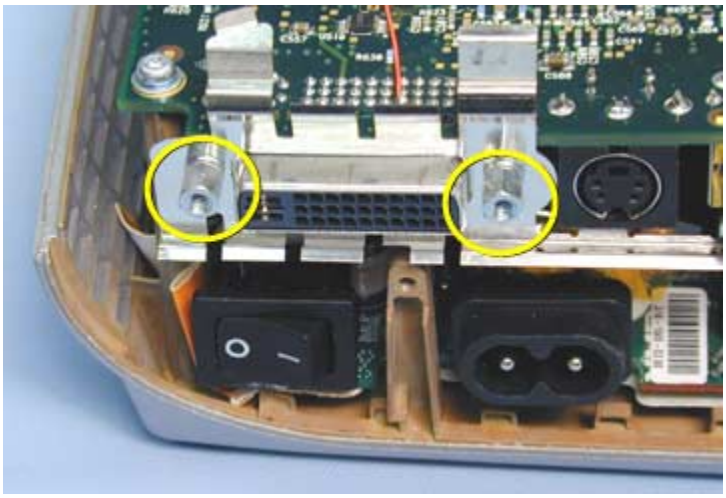
1 Remove the following items:

Front bezel (see page 11)

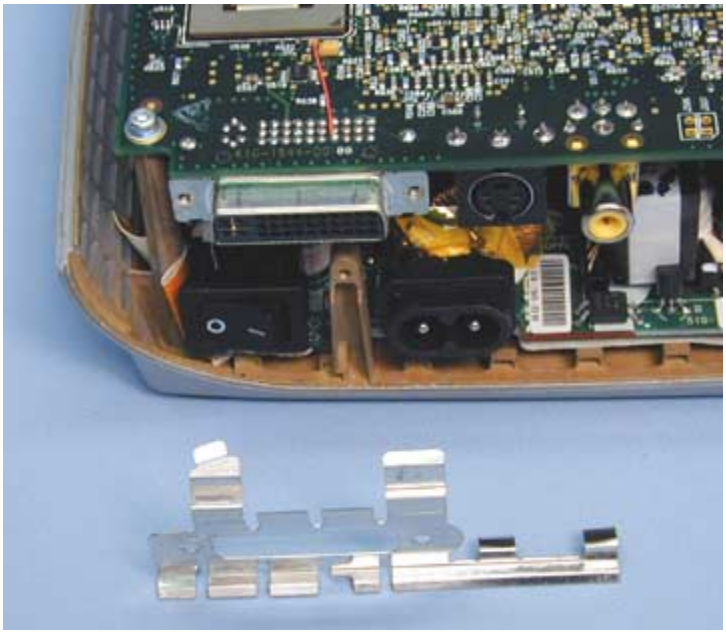
Rear bezel (see page 15)

Top case (see page 18)

2 Use a 3/16 inch nut driver to remove the #4-40 jack screws from both sides of the M1 connector.



3 Pull the I/O shield away from the M1 and video connectors on the controller ECA.



Assembly Notes

- Make sure that the fingers at the bottom of the I/O shield will contact the rear bezel when it's replaced. The contact fingers at the top of the I/O shield should contact the top case when it's replaced.
- Fasten the I/O shield to the M1 connector on the controller ECA using the two jack screws. Tighten the jack screws to 4 in.-lbs. (.451 N m).

Lamp Sync Cable

The lamp sync cable (211-0155-xx) provides a pathway for lamp enable and lamp lit signals between the controller ECA and ballast. The lamp sync cable is also included with a new ballast.

For information about checking voltages, see Controller Voltages on page 90.

1 Remove the following items:

Front bezel (see page 11)

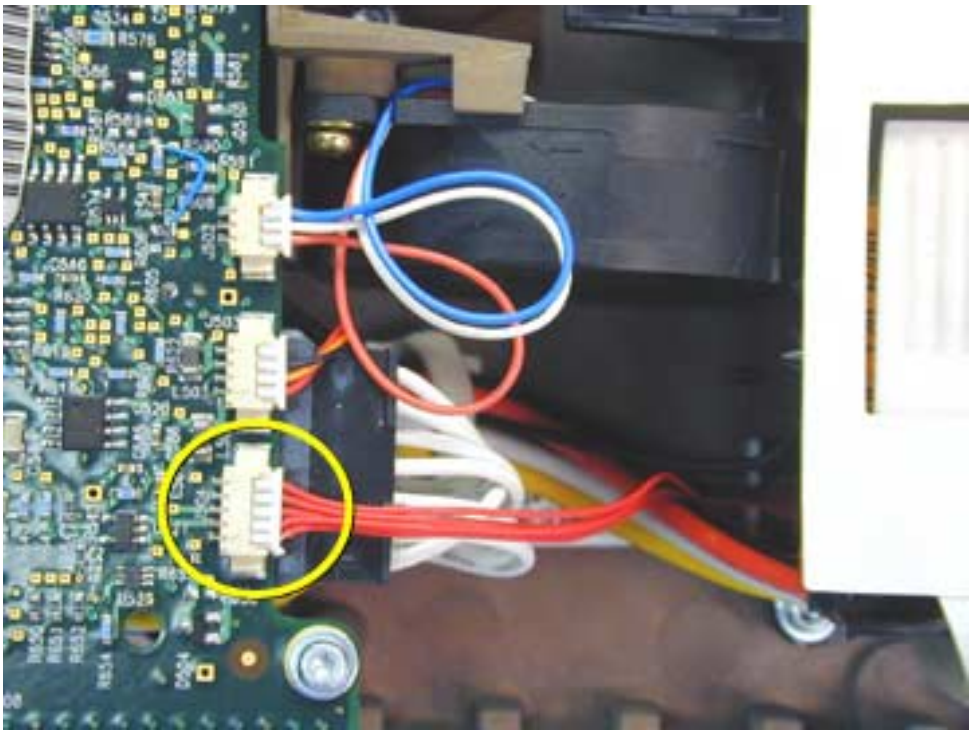
Rear bezel (see page 15)

Top case (see page 18)

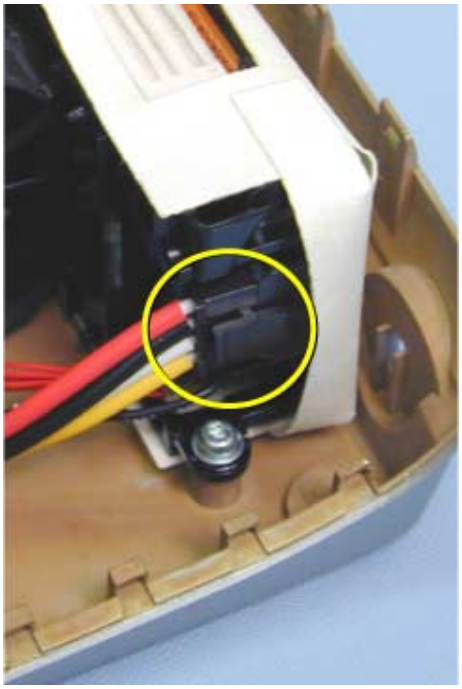
Lamp module (see page 13)

2 Unplug the lamp sync cable from connector J504 on the controller ECA.

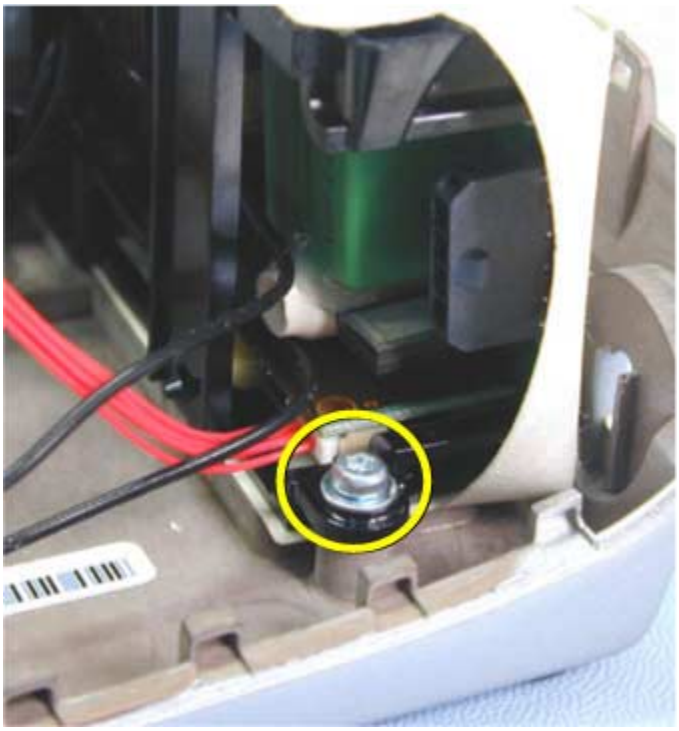
CAUTION! Make you do not stretch the cables inside the connectors. Use a needle-nose pliers or tweezers to unplug the connectors.



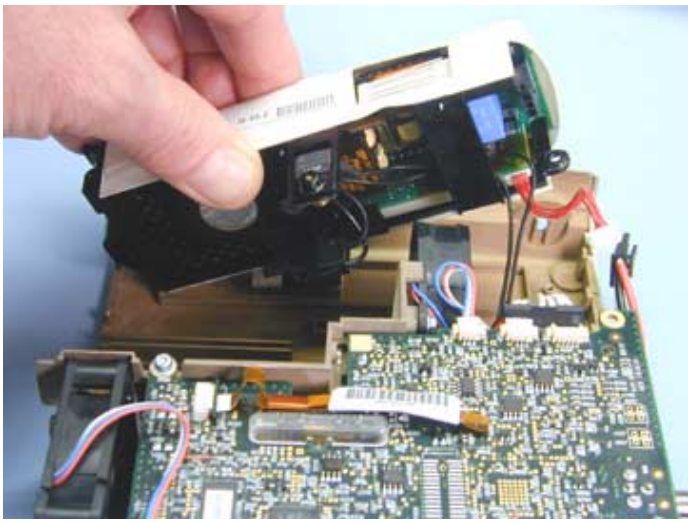
3 Unplug the power supply/ballast cable from its connector on the ballast.



4 Remove the screw that fastens the ballast to the bottom case

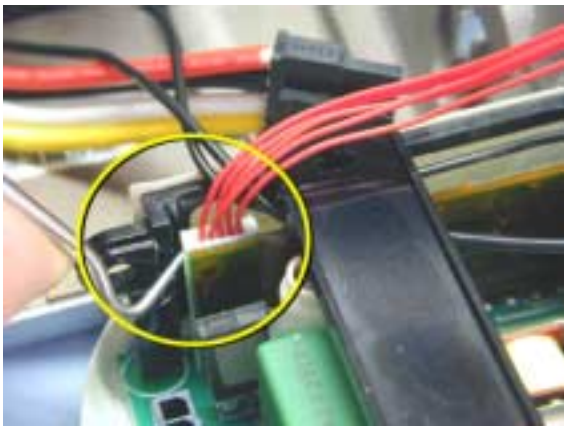


5 Lift the rear of the ballast up to detach the locking tab in the front of the ballast.



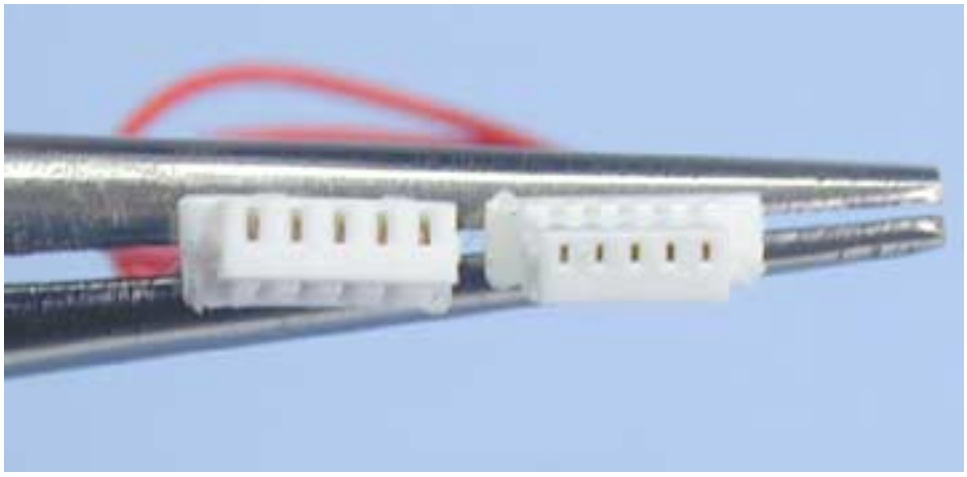
Note that the ballast is still attached to the power supply with a cable.

6 Place the ballast on the work surface next to the bottom case. Use a tweezers or small pick to work the lamp sync cable connector loose. Take care not to damage the circuit board.



Assembly notes

- Note that the two connectors on the lamp sync cable are different.



The connector with the **small** holes plugs into the ballast

- To plug in the cable, align the holes on the cable connector with the pins on the ballast connector. Then press the connector into place.

Front Fan

The front fan (526-0065-xx) is located at the front of the projector adjacent to the lens barrel. The fan exhausts heated air from the power supply and optical engine through vent slots in the front bezel.

1. Remove the following items:

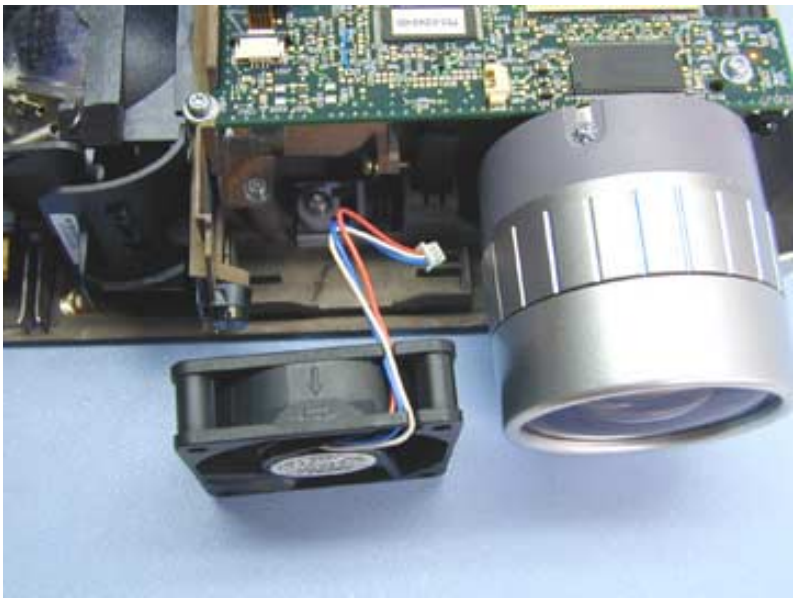
   Front bezel (see page 11)

   Rear bezel (see page 15)

   Top case (see page 18

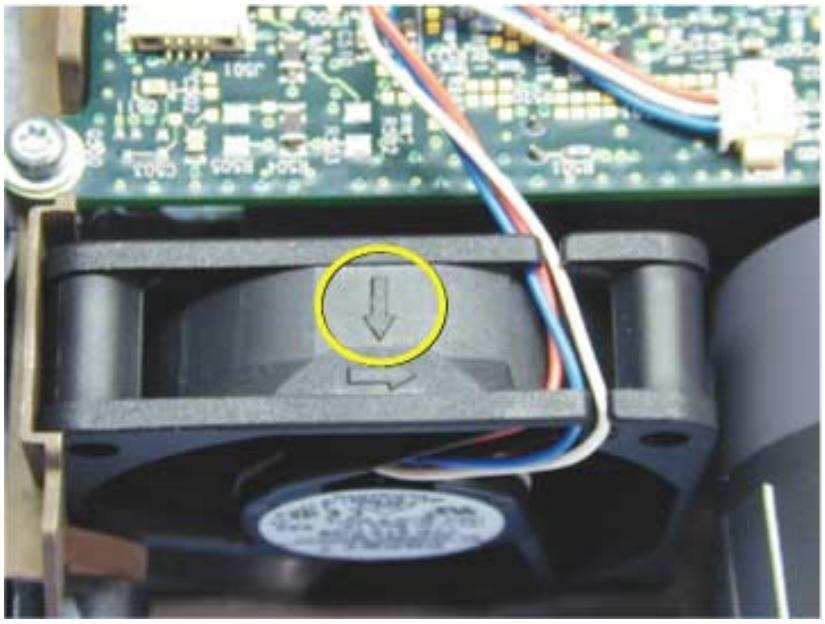
2. Unplug the fan cable from the controller ECA at connector J500.

3. Lift the fan from its recess in the bottom case.



Assembly Notes

- Ensure that the airflow direction arrow on the top of the fan points toward the front of the projector and that the fan cable wires route through the slot in the fan housing.



- Position the fan so that it rests in the guide slots in the bottom case.
- Reconnect the cable to the controller ECA.

Lamp Fan

The lamp fan (505-0933-xx) is located behind the lamp and fastens to a bracket on the optical engine. The fan directs cool air around the lamp and out through the front bezel. The lamp fan is also included with a new optical engine.

1 Remove the following items:

Front bezel (see page11)

Rear bezel (see page 15)

Top case (see page 18)

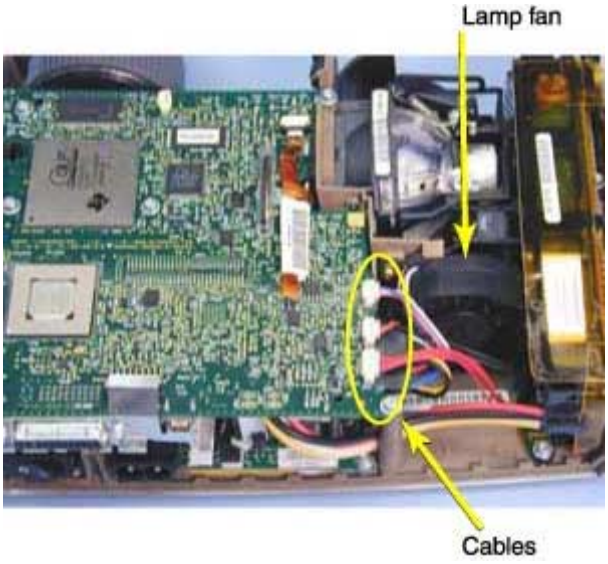
2 Unplug the following cables from their connectors on the controller ECA. The cables (circled below) are in a group near the lamp fan.

Lamp fan cable at connector J502

Optical engine blower at connector J503

Lamp sync cable at connector J504

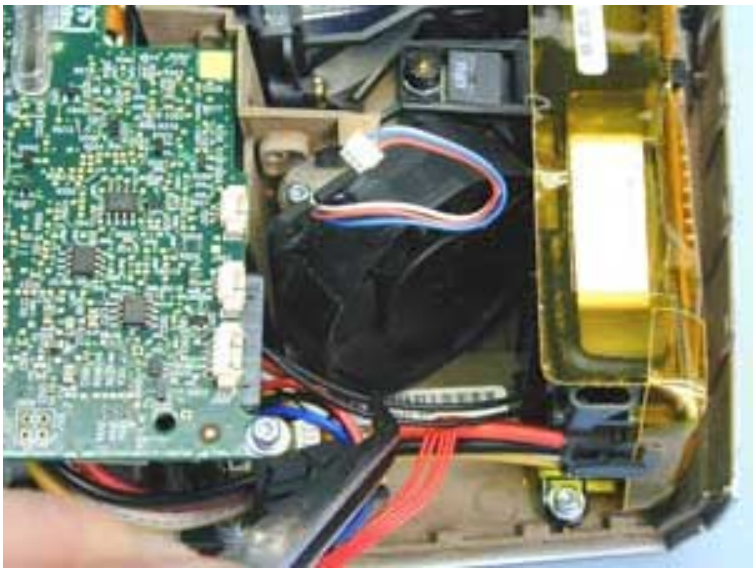
Power supply cable at connector P2 (below the lamp sync and blower connectors)



3 Use a T-8 Torx driver to remove the M2.5x6 screw that secures the fan to the optical engine chassis.

4 Carefully twist the fan counterclockwise to allow it to clear the optical engine chassis and the ballast assembly during removal.

The fan fits into a recess in the ballast. By twisting the fan slightly you can clear both the ballast and the controller ECA.



5 Lift the fan out of the projector.

Assembly Notes

- Ensure that the airflow direction arrow on the top of the fan points toward the front of the projector and that the fan cable wires route through the slot in the fan housing.

- Position the fan against the bracket on the optical engine chassis.
- Replace the M2.5x6 screw that secures the fan to the optical engine chassis. Tighten the screw to 3 in.-lbs. (.339 N m).
- Reconnect the cables to the controller ECA.

Controller ECA

The controller ECA (510-1544-xx) is located beneath the top cover on top of the optical engine. It includes a shroud that covers the slot through which the top portion of the color wheel extends.

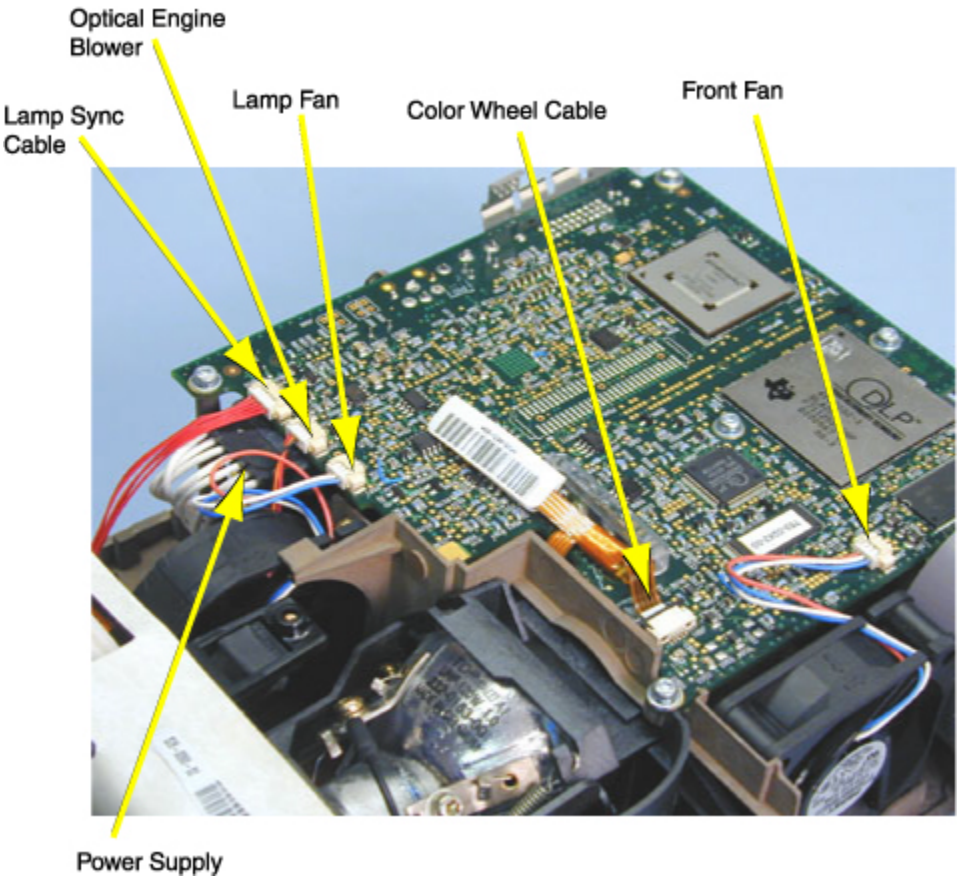
1 Remove the following items:

Front bezel (see page 11)

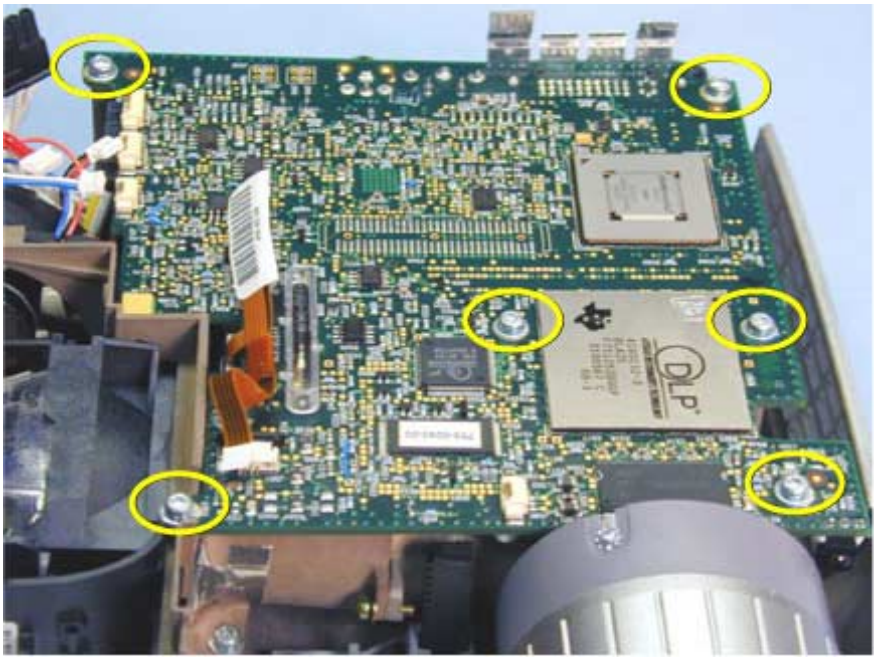
Rear bezel (see page 15)

Top case (see page18)

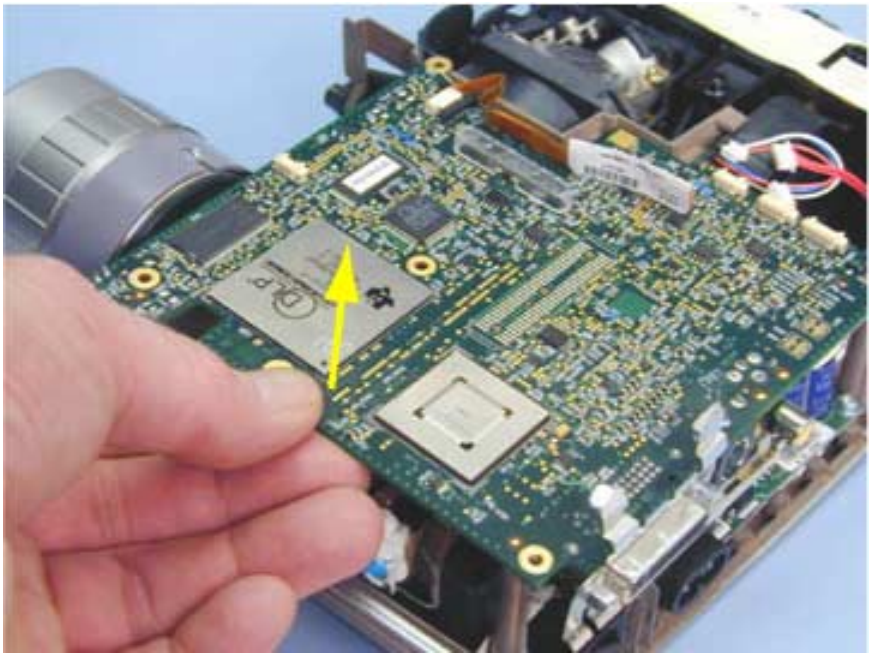
2 Unplug the cables from the following connectors on the controller ECA:



3 Use a T-8 Torx driver to remove the six M2.5x6 screws that attach the controller ECA stack to the bottom case and optical engine.

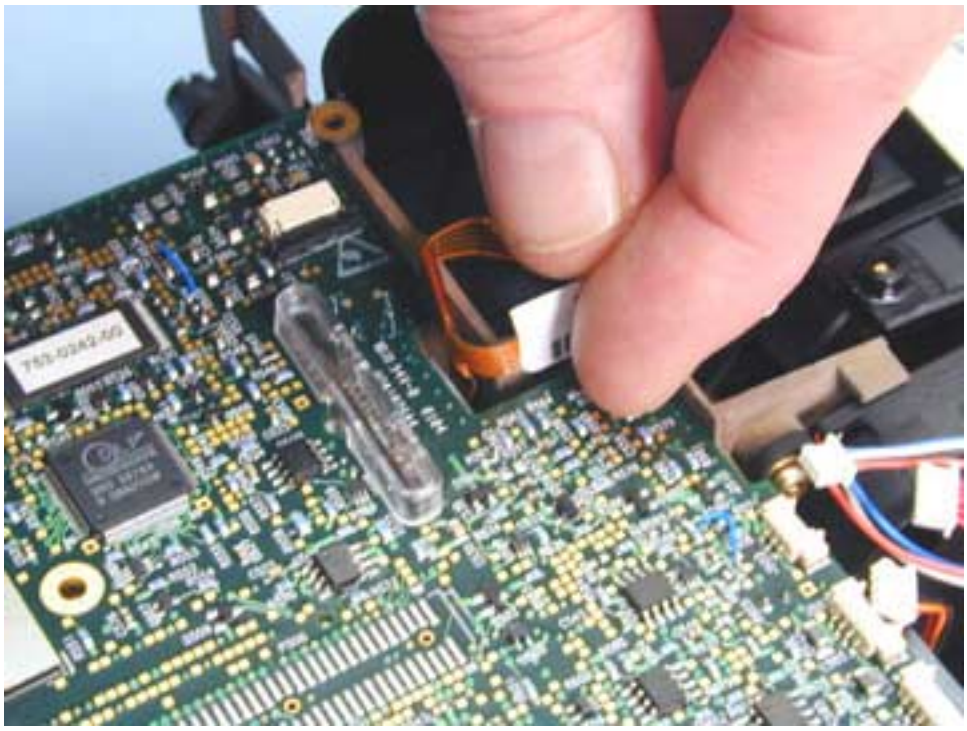


4 Carefully lift the controller ECA upward to disengage the connector on the bottom side from the optical engine. Lift from the center of the board, as indicated below.



Assembly Notes

- Ensure that the color wheel shroud is properly secured to the controller ECA. Three tabs on the shroud engage the edge of the slot on the controller ECA.



- As you place the controller over the optical engine, make sure the color wheel fits inside the shroud. Hold the color wheel cable out of the way (see photo above).
- Make certain that the connector on the bottom side of the controller ECA aligns properly with the connector on the optical engine. After you confirm proper alignment of these connectors, press the controller ECA down firmly to ensure that they securely engage.
- Fasten the controller ECA to the optical engine and bottom case with the six M2.5x6 screws. Tighten the screws to 3 in.-lbs. (.339 N m).
- Reconnect all cables to the controller ECA.

Ballast

The ballast (526-0090-xx) is located on the side of the projector opposite the lens. The ballast receives power from the power supply, stepping it up to ignite the lamp module.

DANGER Do not attempt to measure the output voltage from the ballast when the lamp strikes. High voltage produced by the ballast to strike the lamp can ruin test instruments as well as cause personal injury.

1 Remove the following items:

Front bezel (see page 11)

Rear bezel (see page 15)

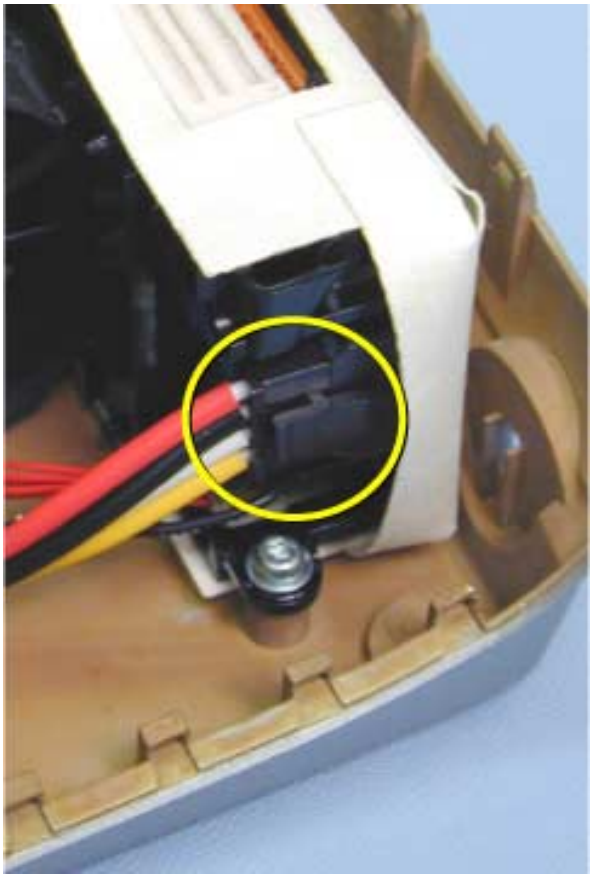
Top case (see page 18)

Lamp module (see page 13)

Controller ECA (see page 34)

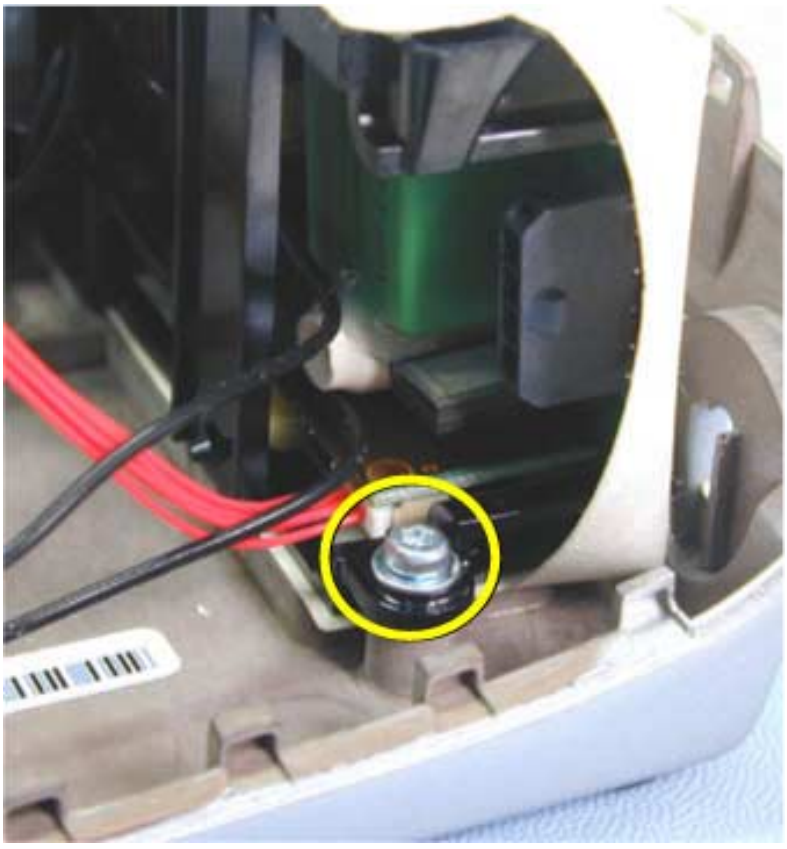
Lamp fan (see page 31)

2 Squeeze the tab on the side of the power supply cable connector and unplug it from the ballast assembly.

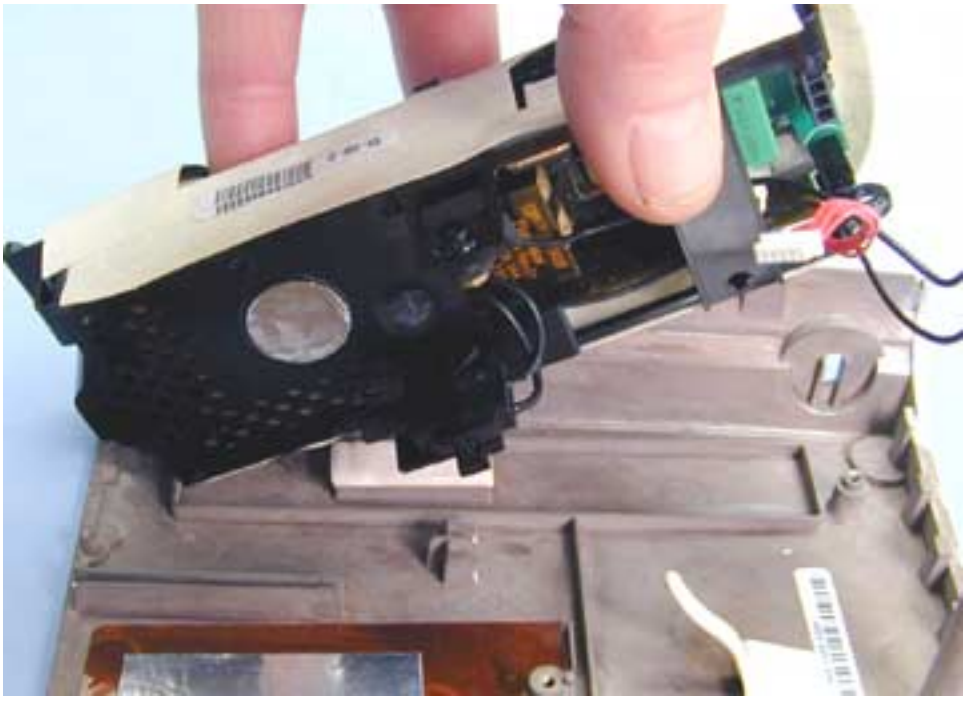


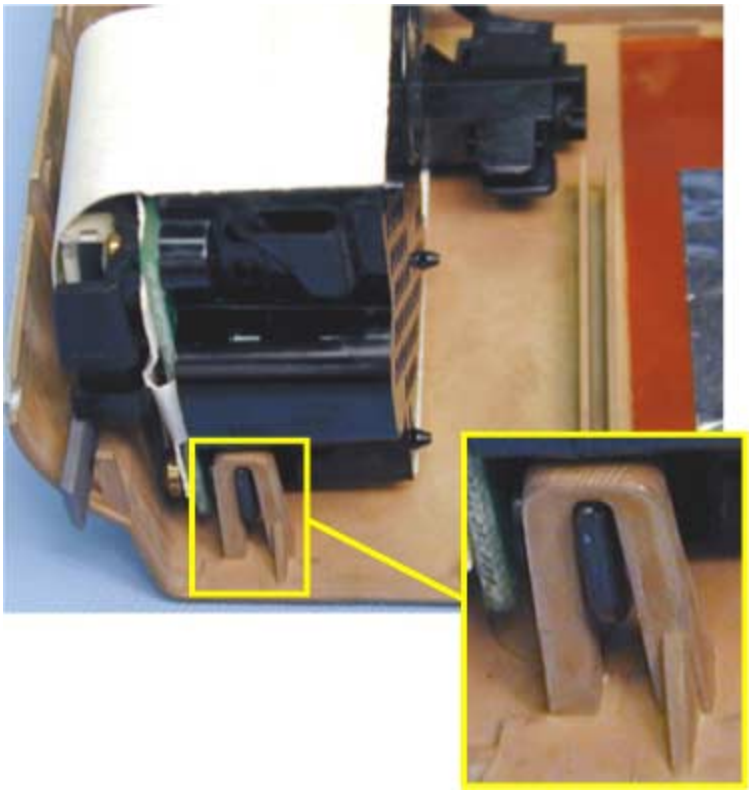
3 Unplug the ballast connector at the power supply.

4 Use a Torx T-8 screwdriver to remove the M2.5x6 screw that attaches the ballast assembly to the bottom case.



5 Lift the ballast assembly from the rear side to disengage the hook on the front from the eye in the bottom case.



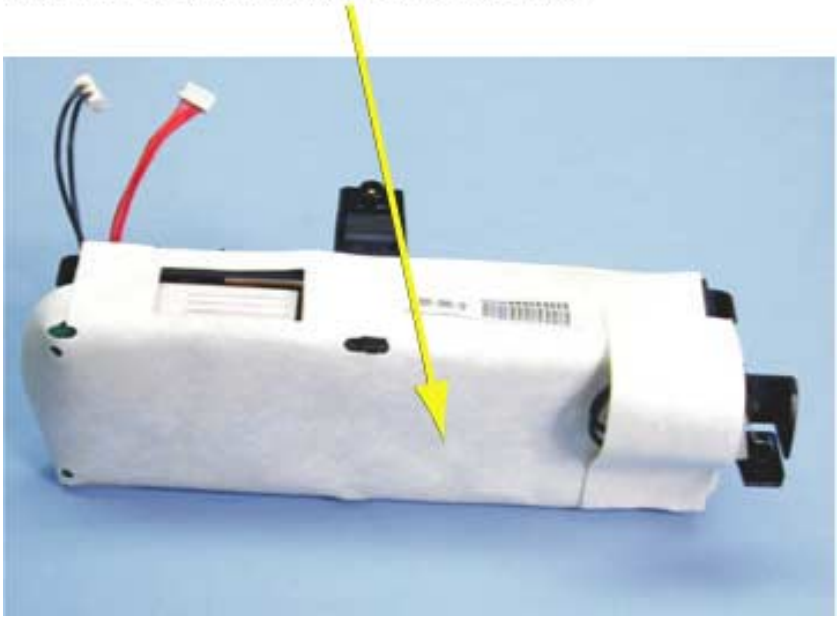


Assembly Notes

- Insert the hook on the front of the ballast in to the eye, then align the screw hole in back. Fasten the ballast assembly to the bottom case with the M2.5x6 screw. Tighten the screw to 3 in.-lbs. (.338 N m)

CAUTION Avoid damage to the plastic insulation on the side of the ballast assembly when you install it in the bottom case. The insulation should have no holes or tears. If holes or tears are apparent, do not use the ballast assembly.

Make sure the insulation has no holes or tears.



Front Bezel Latch

The front bezel latch (505-0918-xx) fastens to the side of the bottom case and engages the front bezel to lock it in position on the projector. It consists of an actuator and a spring. A slot on the side of the bottom case allows access to the latch. Releasing the latch allows the front bezel to be removed from the projector. A new bottom case (505-0812-xx) includes the front bezel latch.

1. Remove the following items:

   Front bezel (see page 11)

   Lamp module (see page13)

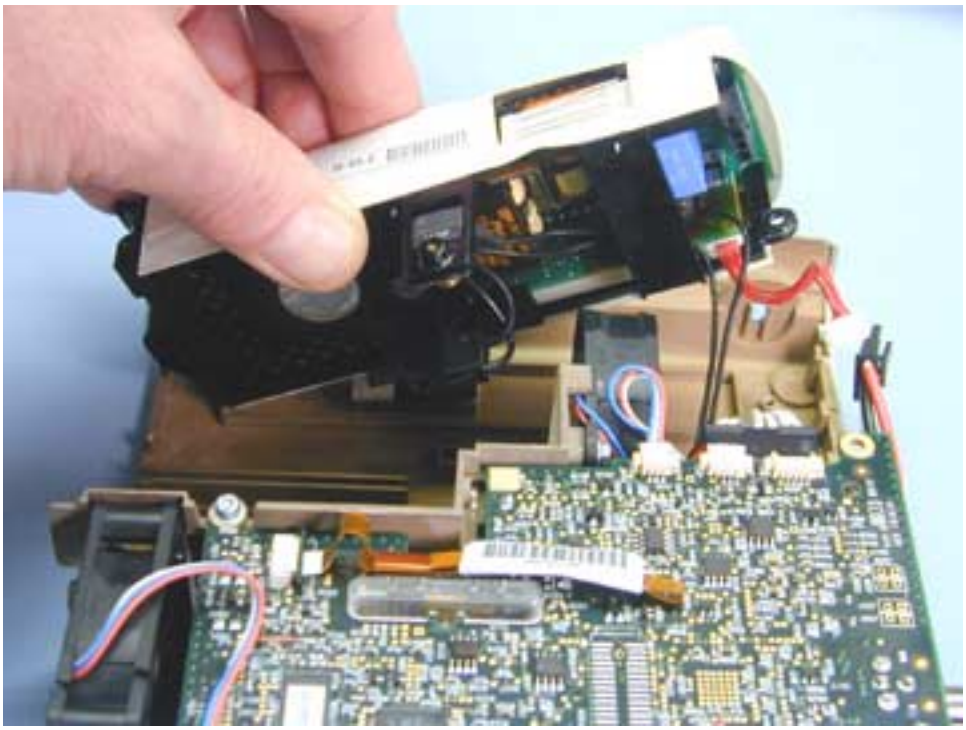
   Rear bezel (see page 15)

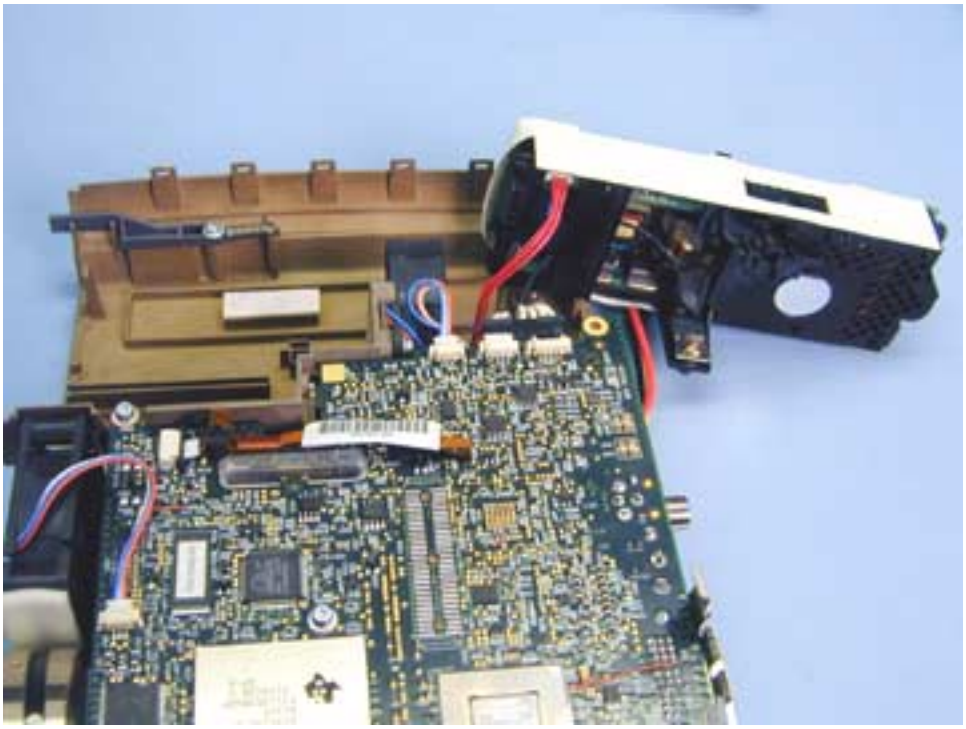
   Top case (see page 18)

2. Squeeze the tab on the side of the power supply cable connector and unplug it from the ballast assembly.

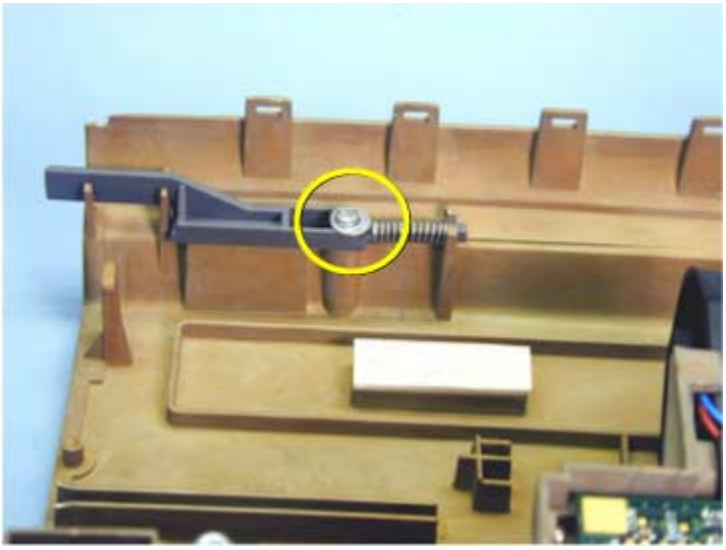
3 Use a Torx T-8 screwdriver to remove the M2.5x6 screw that attaches the ballast assembly to the bottom case.

4 Lift the ballast from the rear side to disengage the hook on the front from the eye in the bottom case. Note that the ballast is still attached to the power supply with a cable.

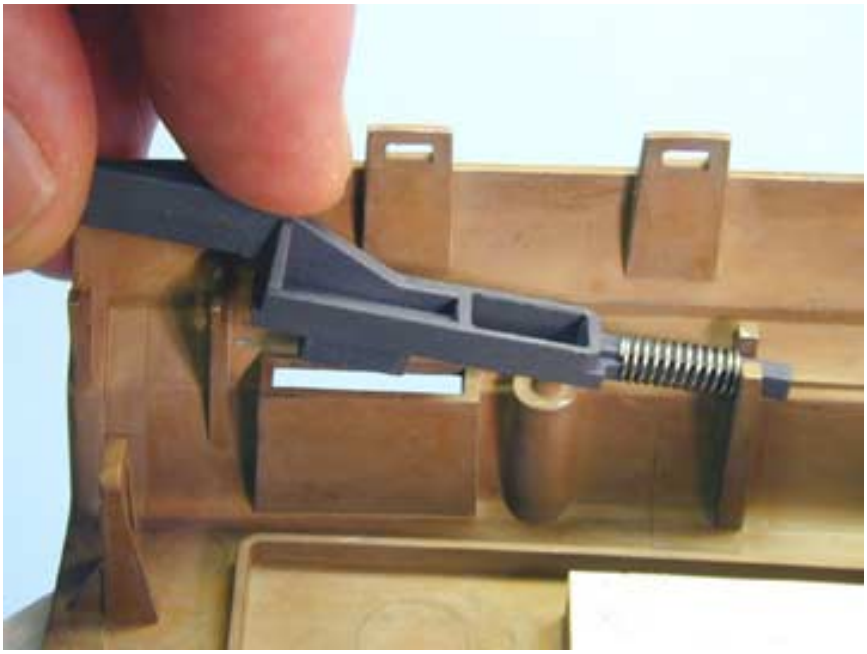




5 Use a Phillips screwdriver to remove the M2.5x6 screw and washer from the front bezel latch.



6 Slide the actuator slightly toward the rear of the projector. Then lift the front of the actuator away from the bottom case.



Assembly Notes

- Make sure that the spring is in position on the actuator before you install the front bezel latch in the bottom case. The spring should be fully seated on the actuator and rest against the tang in the bottom case.
- Replace the M2.5x6 screw and washer that secure the front bezel latch in the bottom case.
- Check the operation of the front bezel latch before you assemble the projector.

Optical Engine

The optical engine (505-0920-xx) is located beneath the controller ECA and forward of the power supply at the side of the projector opposite the ballast. It fastens to the bottom case and produces the projected image by directing focused light from the lamp module through the color wheel and onto the Digital Micromirror Device (DMD). The optical engine contains a formatter ECA that processes the image signal from the controller ECA before the signal is delivered to the DMD. The optical engine also includes a gasket that insulates it from the controller ECA.

1 Remove the following items:

Front bezel (see page 11)

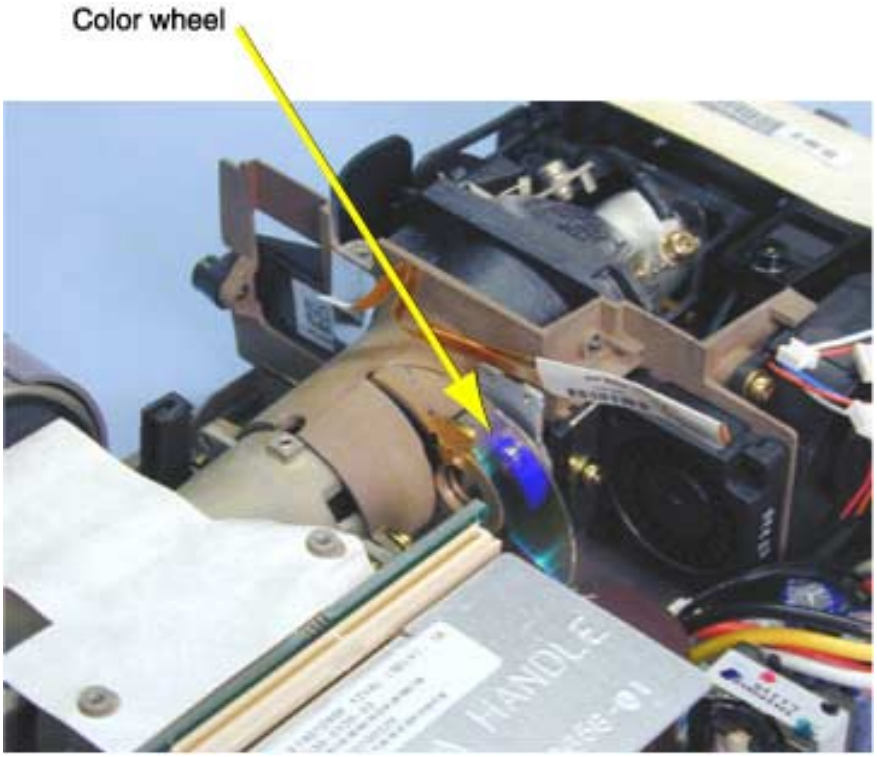
Lamp module (see page13)

Rear bezel (see page 15)

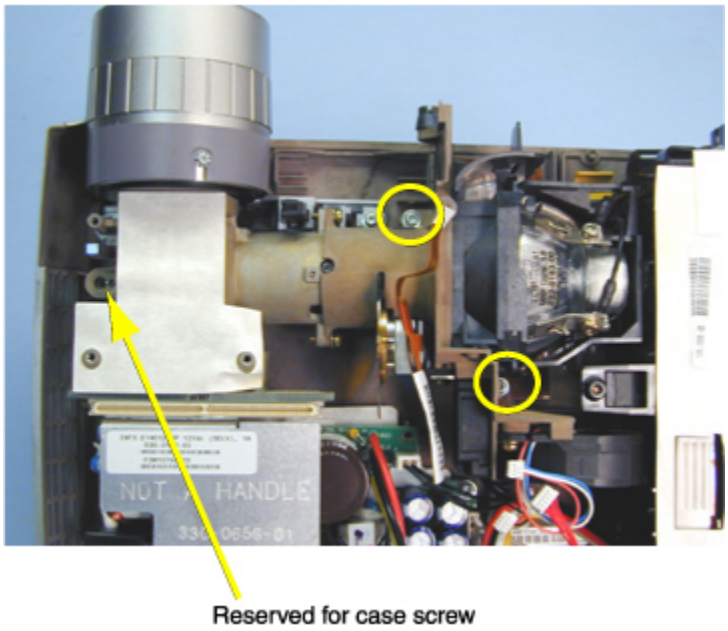
Top case (see page 18)

Controller ECA (see page 34)

CAUTION The color wheel is exposed in the TDP-P4 engine. Take extreme care not to bump it with a tool or press against it because it is very delicate. A broken color wheel requires engine replacement.



2 Use a T-8 Torx driver to remove the two M2.5x6 Torx screws that attach the optical engine to the bottom case.



3 Carefully lift the optical engine up and out of the bottom case. Take care where you pick the engine up. Below are some good places to grasp the optical engine.

Assembly Notes

NOTE Each new optical engine is packaged in a plastic "clamshell" case to protect it from dirt and dust contamination. When you remove the optical engine from the projector, place it in the case in which the new optical engine arrived. Go to page 48 to see how to pack the engine in the clamshell case.

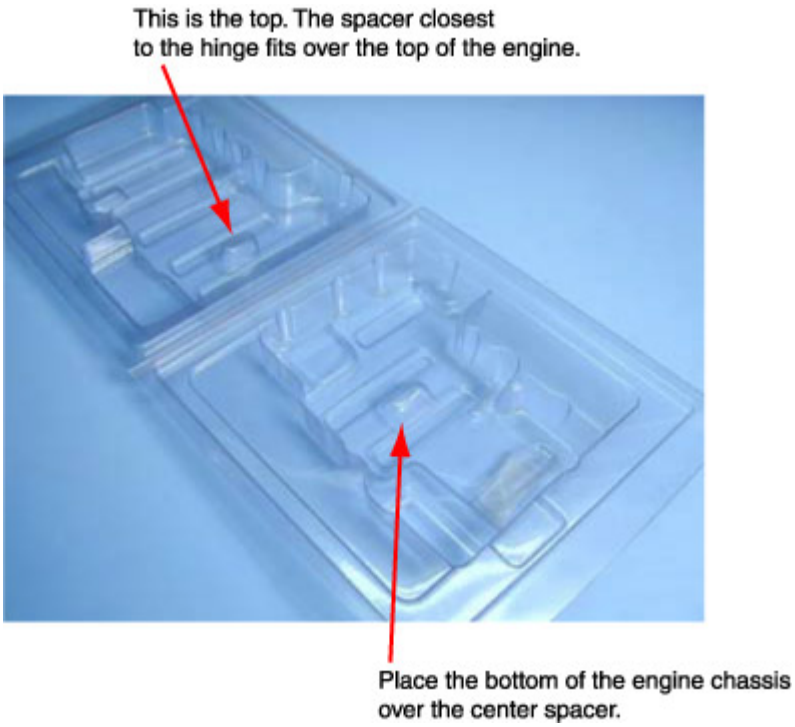
- Ensure that the gasket is in place on the top of the optical engine to insulate it against the controller ECA.
- Tighten the two M2.5x6 screws that secure the engine to the bottom case to 3 in.-lbs. (.338 N m).

Packing the optical engine in the clamshell case

The clamshell plastic case that comes with each new engine is designed to protect the engine and color wheel during shipping and storage. When you replace an optical engine in the TDP-P4, you must put the old engine in the clamshell case in which the new engine was shipped.

The case is hinged on one end, and it snaps together on the other end.

1 Place the engine in the clamshell case so that the lens and the engine chassis align with the case's molded shape.


This is the top. The spacer closest to the hinge fits over the top of the engine.
Place the bottom of the engine chassis over the center spacer.

2 Close the top of the case over the engine and snap the corners together.

Elevator Assembly

The elevator assembly (505-0906-xx) is located in the bottom case. It consists of an elevator shaft, actuator and housing. The elevator shaft slides up or down through the housing to raise or lower the front of the projector when you press the actuator button on the side of the bottom case. A new bottom case includes the elevator.

1. Remove the following items:

   Front bezel (see page 11)

   Rear bezel (see page 15)

   Top case (see page 18)

   Lamp module (see page 13)

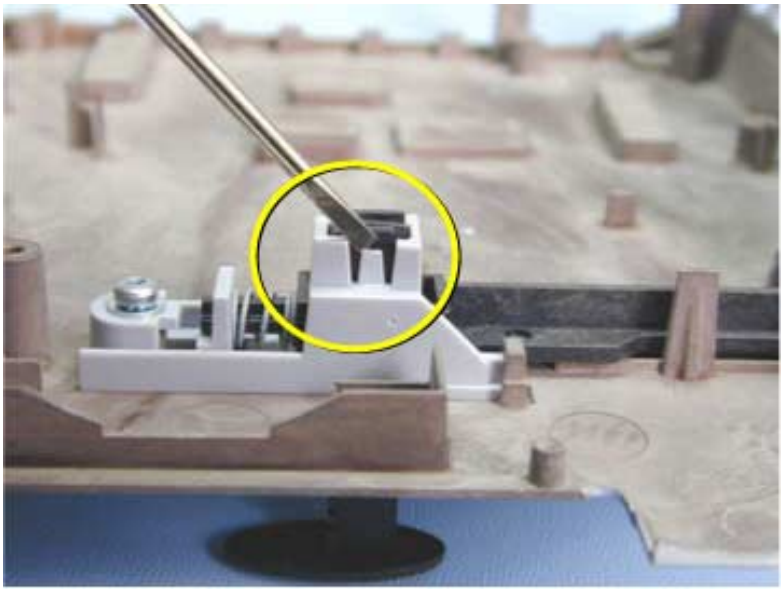
   Front fan (see page 27)

   Controller ECA (see page 34)

   Optical engine (see page 45)

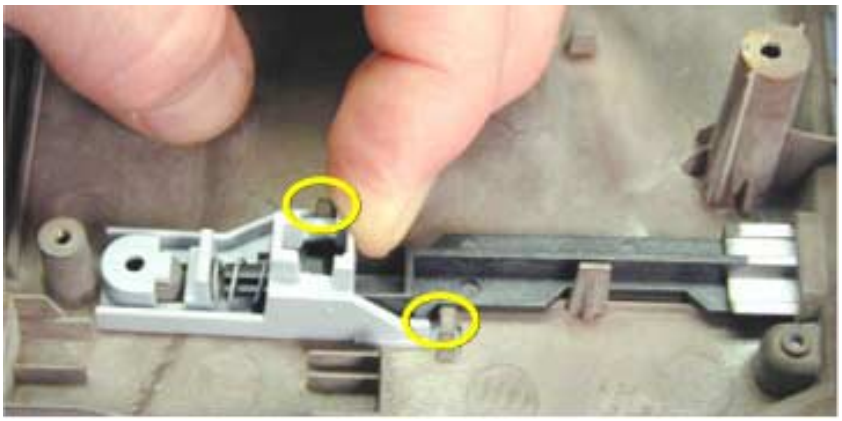
2. Adjust the elevator shaft to its fully extended position.

3. Gently pry one of the two tabs on the elevator housing away from the stops at the upper end of the elevator shaft, allowing the shaft to fall through the housing. Take care when prying the tabs.

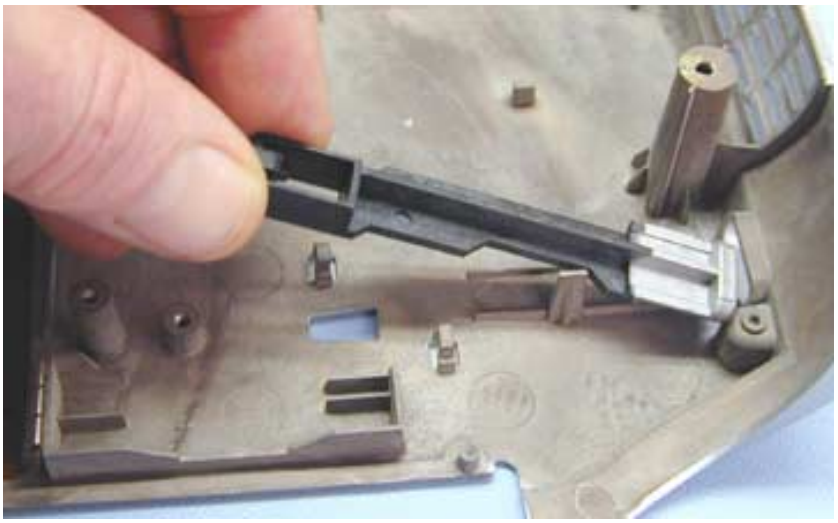


4 Use a Torx T8 screwdriver to remove the M2.5x6 screw that fastens the housing to the bottom case.

5 Slide the elevator housing toward the center of the projector to disengage two tabs from slots in the bottom case. Then remove the housing.

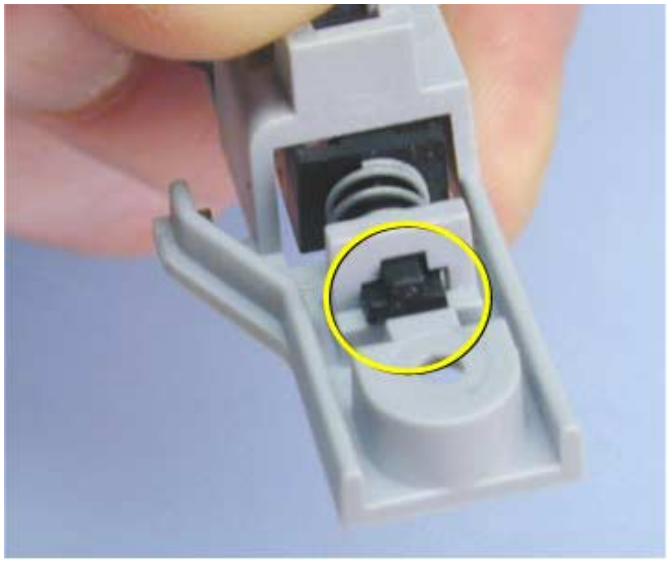


6 Once the housing is out, you can lift the actuator out of the bottom case.



Assembly Notes

- Hold the actuator and housing together as you replace them in the bottom case. Note how the actuator end fits into the housing.



- Fasten the elevator housing to the bottom case with the M2.5x6 screw. Tighten the screw to 3 in.-lbs. (.338 N m).

Engine Blower

The optical engine blower (505-0071-xx) consists of the 30mm blower and a strip of double-sided adhesive tape that adheres the blower to the optical engine chassis. The optical engine blower moves air across the front of the lamp module, directing excessive heat away from the optical engine. The optical engine blower is also included with a new engine.

1 Remove the following items:

Front bezel (see page 11)

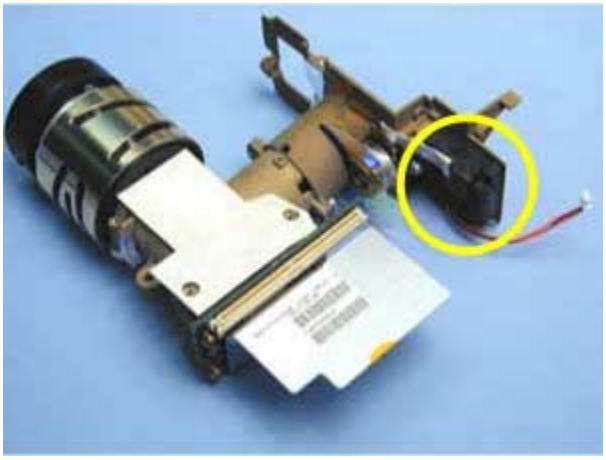
Rear bezel (see page 15)

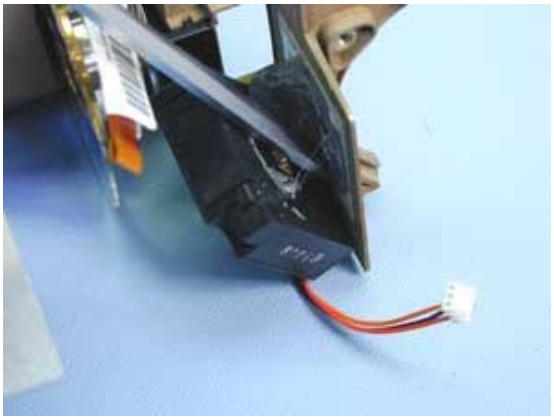
Top case (see page 18)

Controller ECA (see page 34)

Optical engine (see page 45)

2 Use a small flat-blade screwdriver to gently pry the blower away from the optical engine chassis.





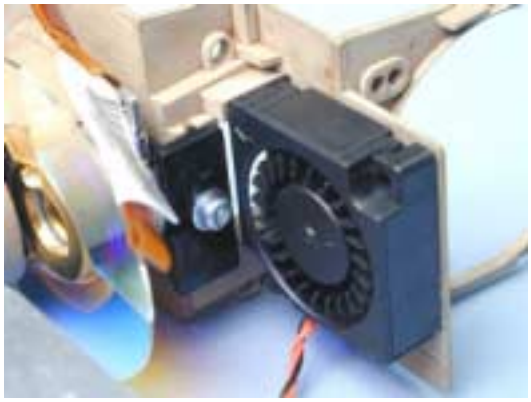
CAUTION Pry carefully to avoid breaking the optical engine chassis or damaging the color wheel. The glass color wheel is exposed in the TDP-P4, and can be easily broken if care is not taken. A broken color wheel requires optical engine replacement.

3 As the blower separates from the optical engine chassis, tape residue will be left behind. Clean away this residue to ensure good adhesion of the replacement blower.

Assembly Notes

- Peel away the protective backing from one side of the double-sided adhesive tape. Apply the tape to the optical engine chassis. Then remove the protective backing from the front side of the adhesive tape.

- Position the optical engine blower carefully so that the discharge duct aligns with the opening in the optical engine chassis. Then press the blower firmly against the adhesive tape.



Power Supply

The power supply (510-1506-xx) is located beneath the controller ECA at the left rear of the projector. It fastens to the bottom case and converts the 100-240 VAC supply voltage to various low voltage DC levels required internally by the projector. The power supply interfaces with the ballast to control lamp strike and operation and to detect the electrical condition of the safety interlock switch.

1. Remove the following items:

   Front bezel (see page 11)

   Lamp module (see page 13)

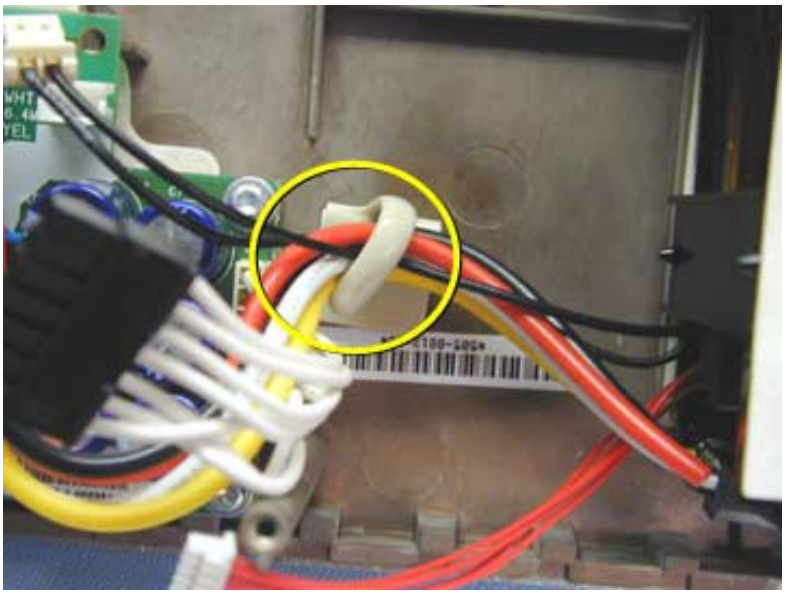
   Rear bezel (see page 15)

   Top case (see page 18)

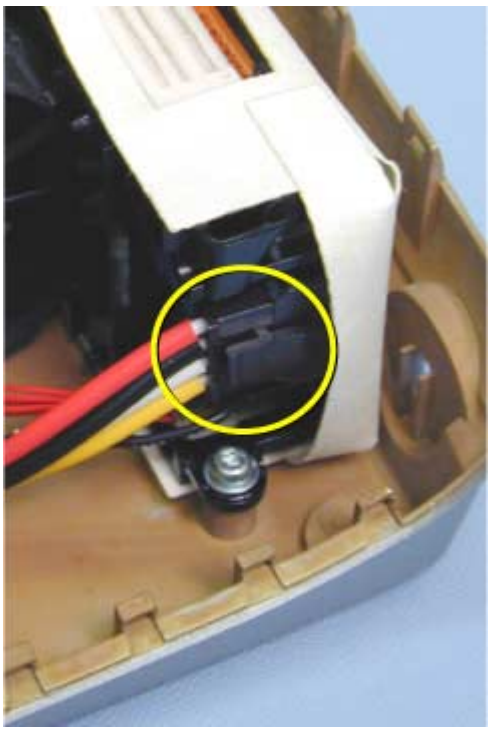
   Controller ECA (see page 34)

   Optical engine (see page 45)

2. Open the cable clip attached to the bottom case between the power supply and ballast.

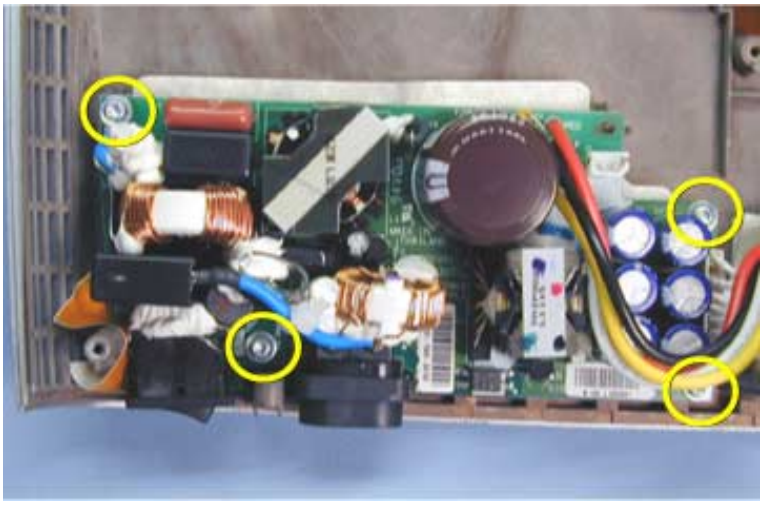


3 Squeeze the tab on the side of the power supply cable connector and unplug it from the ballast assembly.



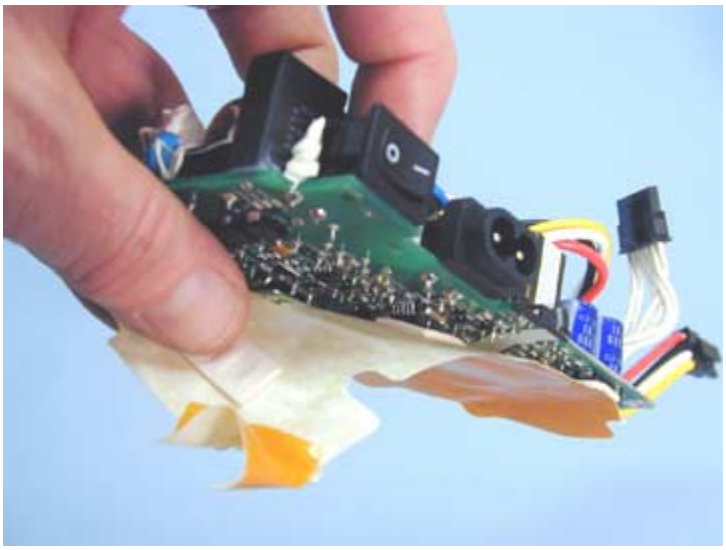
4 Unplug the ballast connector at the power supply.

5 Use a Torx T-8 screwdriver to remove the four M2.5x6 screws that attach the power supply to the bottom case.



6 Lift the power supply from the bottom case.

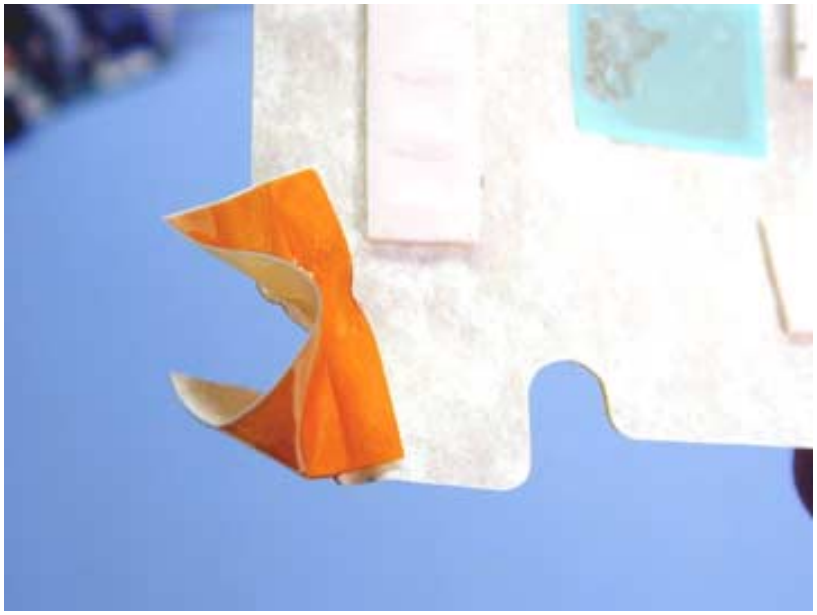
7 If you are replacing the power supply, carefully remove the **power supply insulator** (505-0889-xx) from the bottom of the power supply.



Assembly Notes

- Before replacing the power supply insulator, make sure it is in good condition. There should be no holes or tears in the top or bottom. If you observe damage, replace the insulator.

- Place the insulator into the bottom as shown below. Note how the insulator is folded and taped on one corner. This allows the insulator to wrap around the post near the rear corner of the bottom case.



- Fasten the power supply to the bottom case with the M2.5x6 screws. Tighten each screw to 3 in.-lbs. (.338 N m)

Bottom Case

The bottom case (505-0812-xx) encloses the bottom half of the projector. A new bottom case includes a certification label, ballast gasket, front bezel latch and elevator. If you need to replace the certification label, see the Assembly Notes below. When you replace the bottom case, you must first remove all the parts in the old case, then install them in the new bottom case.

1 Remove the following items:

Front bezel (see page 11)

Rear bezel (see page 15)

Top case (see page 18)

Controller ECA (see page 34)

Optical engine (see page 45)

Power supply (see page 55)

Power supply insulator (see page 57)

Ballast (see page 37)

You are left with the bottom case.

Assembly Notes

- When you replace the bottom case, remove the serial number label from the certification label on the old bottom case. You can use a heat gun or hair drier to loosen the serial number label on the old bottom case. Take care not to ruin the label by applying too much heat. Attach the serial number label to the certification label on the new bottom case.

- The certification label (020-1077-xx) fits into the recessed area on the outside of the bottom case. If you need to replace it, be sure to remove the serial number label (above) and adhere it to the new certification label.

Resetting the lamp timer

To reset the lamp hour counter in the Status menu, do the following:

1. Press and hold the **resync** button.
2. While holding the **resync** button down, press the **menu** button for 10 seconds.
3. To verify that the counter was reset, press the **menu** button, then navigate to the **Status menu**. The lamp counter is at the top of the list.

Fasteners

Below is a list of the fasteners included in the fastener kit (802-0025-xx) for the TDP-P4 projector. You'll also find the suggested torque settings for each fastener.

Fastener	Application	Torque
M2.5x6 Torx SEM	Power supply (4), ballast (1), optical engine (2), controller ECA (6), rear bezel (1)	3 in.-lbs. (.34 N m)
M2.5x8 Torx SEM	Lower case (1)	3 in.-lbs. (.34 N m)
Jack nuts 4-40 w/lock	I/O EMI (2)	4 in.-lbs. (.452 N m)
M2x3 Star SEM	Zoom ring (2)	2 in.-lbs. (.226 N m)

Software Upgrades

This section shows you how to download the software from the Toshiba/InFocus web site, how to install the software in your computer, and how to upgrade the system, boot and splash screen software for the TDP-P4.

Downloading the software to your computer

When you click the Download Now button on the Software page, the File Download dialog box appears.

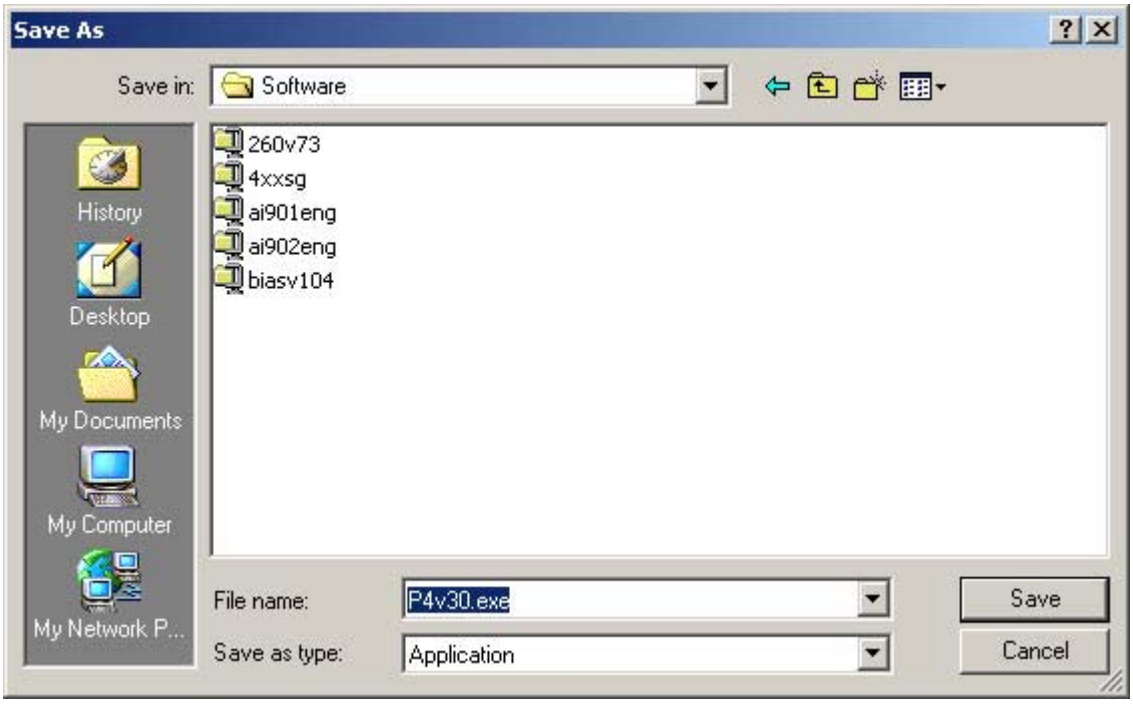
NOTE The illustrations below refer to version 3.0 of the TDP-P4 software. The version of the software you download may be different.

1 In the File Download box, select Save This Program To Disk option, then click OK.

File Download
You have chosen to download a file from this location.
P4v30.exe from www.infocus.com
What would you like to do with this file?
Run this program from its current location
Save this program to disk
Always ask before opening this type of file
OK
Cancel
More Info

2 In the Save As dialog box, navigate to the folder in which you want to store the file, then click OK.

NOTE Once you install the software files, you won't need the .EXE file you download. You may want to save it in a temporary folder.



The file downloads to your computer's hard drive. Now you're ready to install the software on the computer.

See page 65 to install the software on the computer.

Installing the Software on the Computer

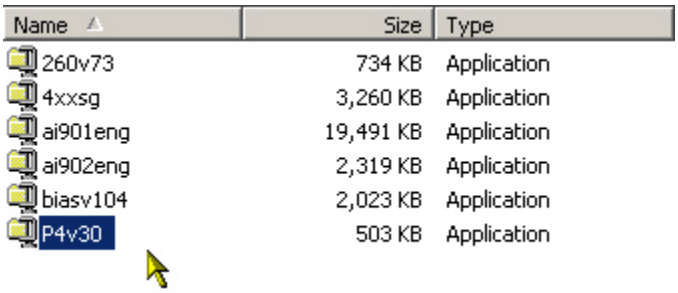
The software you download is bundled into one .EXE file. You open the .EXE file and install the upgrade software on the computer you plan to use to flash the projector.

The .EXE file is made of two other .EXE files. One contains the five software upgrade files. The other contains the Upgrade Utility and drivers.

1 Open Windows Explorer on your computer.

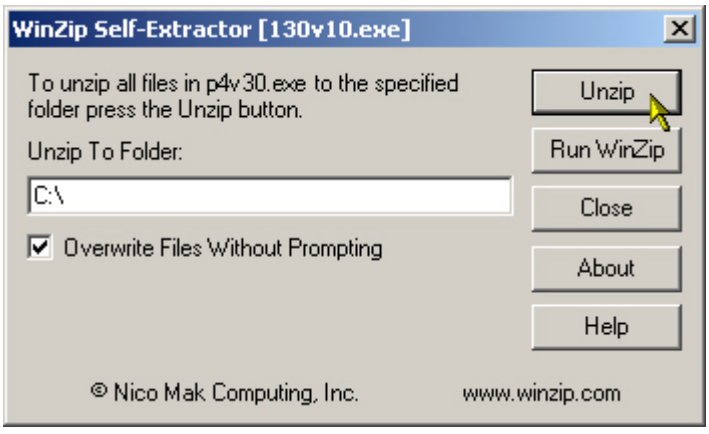
To do this, click the *Start* button, point to *Programs*, then click *Windows Explorer*.

2 In Windows Explorer, locate the .EXE file that contains the upgrade files. Double-click the file to extract the contents.



The filename P4v30.exe means that this is version 3.0 of the system software for the TDP-P4. The version number changes each time the software is updated.

3 The WinZip Self-Extractor dialog box appears. Leave the folder choice as c:\. WinZip extracts the files to several locations.



NOTE If you can't find the file, use the Windows Find feature to locate the file. On the Tools menu, point to Find, then click Files or Folders. In the Find dialog box, enter the name of the file (for example, *P4v30exe*).

4 To extract the files, click *Unzip*. Click OK in the message box that appears, then click *Close.*

Now you're ready to upgrade the software in the projector. See page 66

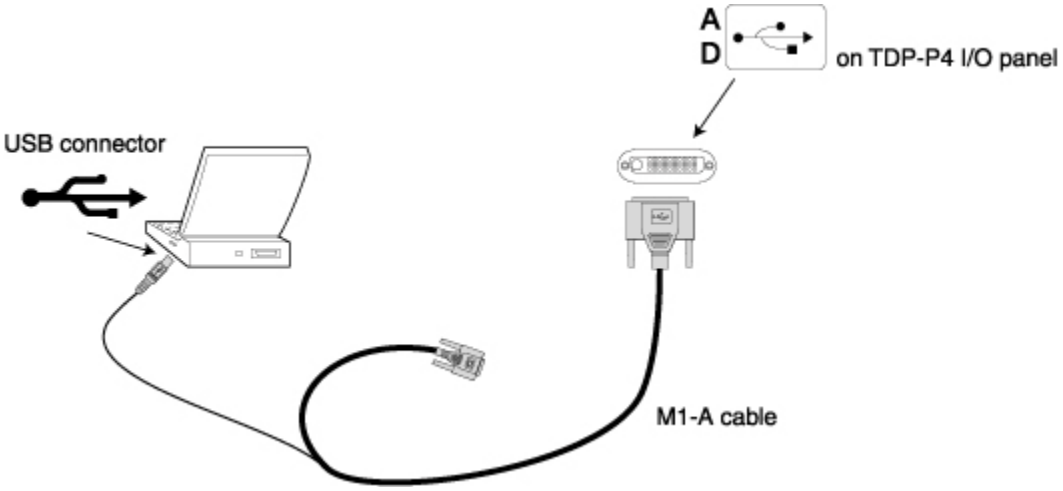
Upgrading the TDP-P4 software

To upgrade the TDP-P4 software, you need the M1-A cable (210-0185-xx) that ships with the projector.

SPECIAL NOTE The computer you use to upgrade the software on the TDP-P4 must run Windows 98 and must have an available USB connector.

Connect the projector to the computer with the M1-A cable

5 Plug the M1-A cable into the projector and computer as shown in the illustration below. You don't need to plug in the monitor cable.

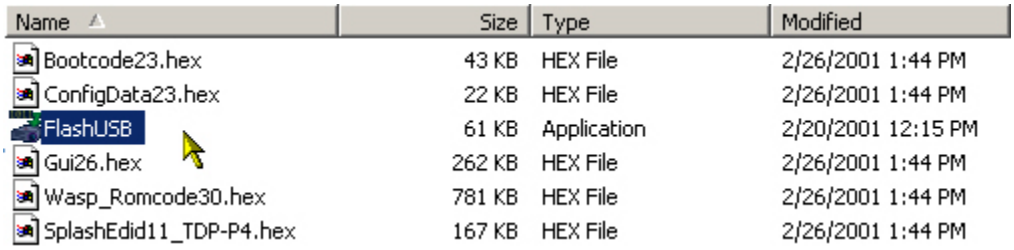


6 Plug the power cord into the projector and into a power source.

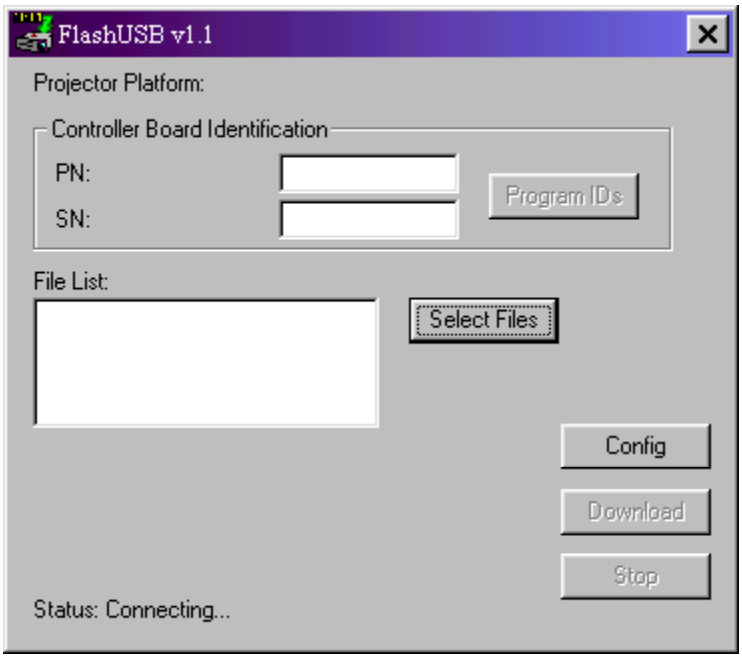
Now you're ready to upgrade the software.

Upgrade the software

1 Open Windows Explorer, navigate to the batch file, then double-click the FlashUSB utility.

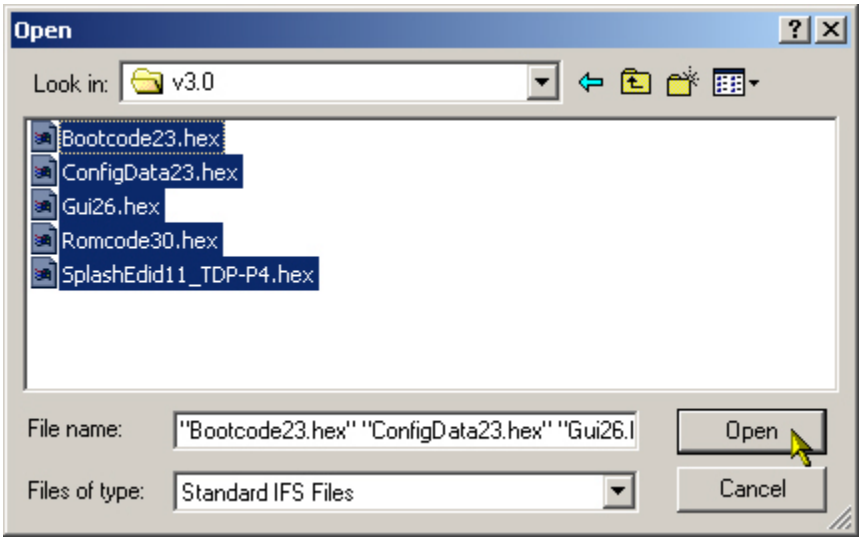

Name
Size
Type
Modified
Bootcode23.hex 43 KB HEX File 2/26/2001 1:44 PM
ConfigData23.hex 22 KB HEX File 2/26/2001 1:44 PM
FlashUSB 61 KB Application 2/20/2001 12:15 PM
Gui26.hex 262 KB HEX File 2/26/2001 1:44 PM
Wasp_Romcode30.hex 781 KB HEX File 2/26/2001 1:44 PM
SplashEdid11_TDP-P4.hex 167 KB HEX File 2/26/2001 1:44 PM

The FlashUSB dialog box opens, ready to begin the upgrade process.

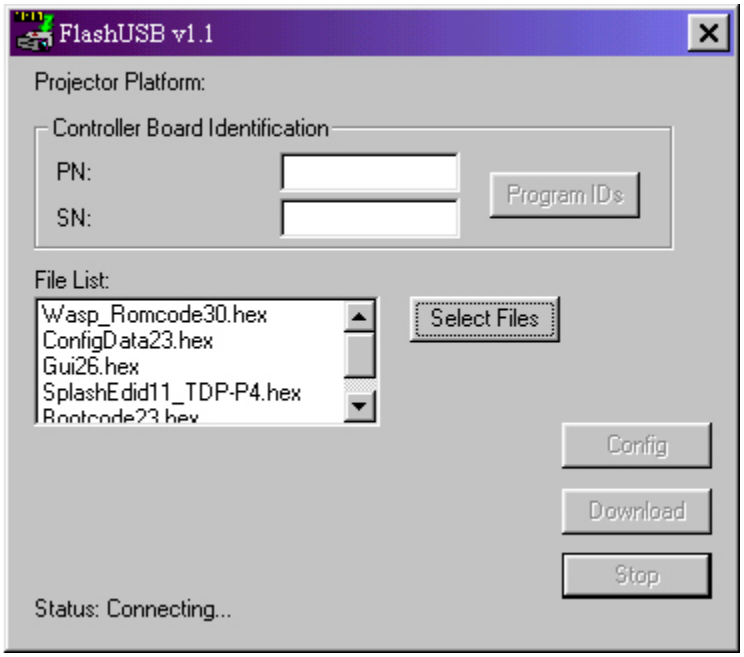


2 Click the Select Files button in the FlashUSB dialog box.

3 In the Open dialog box, select all the HEX files, then click Open.



The selected files appear in the FlashUSB dialog box. The Status indicator at the bottom of the dialog box reads Connecting. This tells you that the computer is attempting to establish a connection with the TDP-P4.



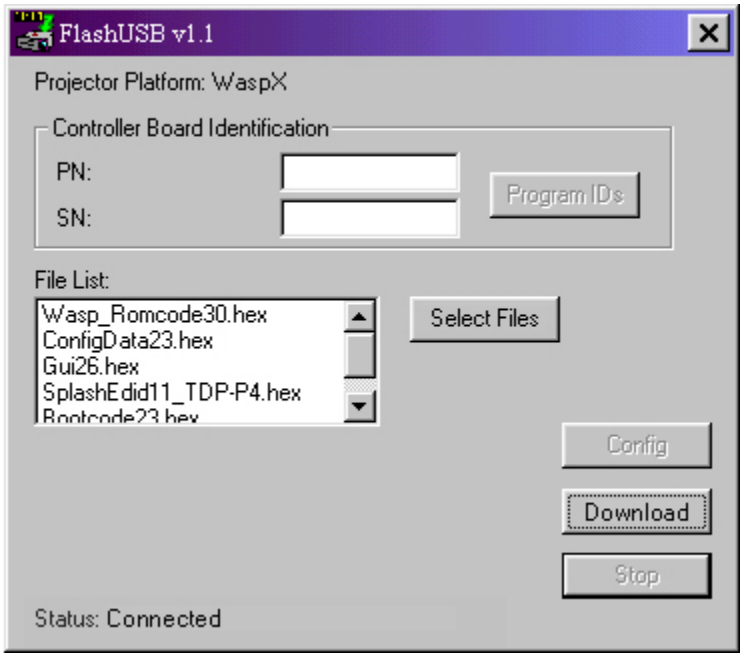
4 On the TDP-P4 keypad, press and hold the **menu** and the **resync** buttons.

5 While holding the buttons down, power up the projector.

NOTE If you're upgrading a TDP-P4 for the first time, you may see Windows 98 New Hardware Wizard. Follow the instructions, then continue with this procedure.

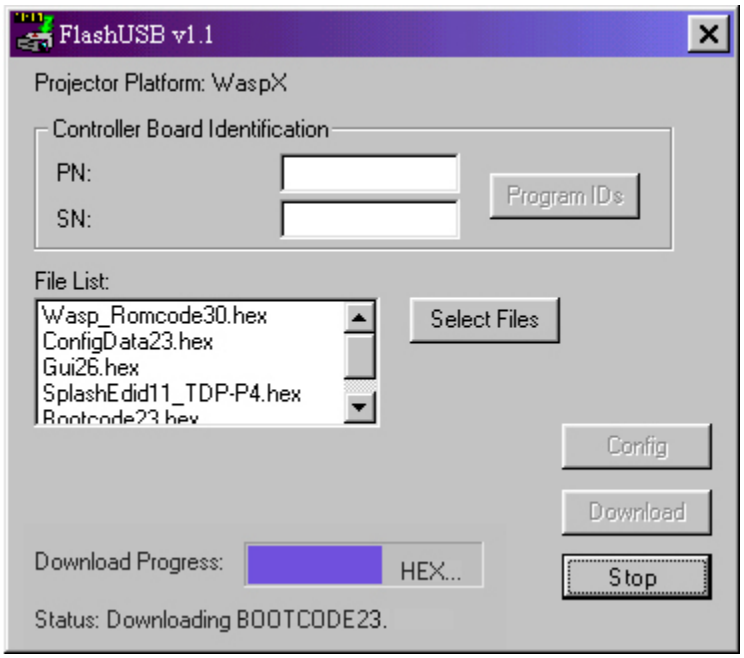
6 Hold the keys down firmly after you power up the projector. The projector should go to 'load state', where the fans are running and the green LED glows, but the lamp does not light.

The *Status: Connecting…* message changes to *Status: Connected*. The **Download button** becomes available



7 In the FlashUSB dialog box, click the Download button.

The software begins downloading to the projector. The process takes several minutes.

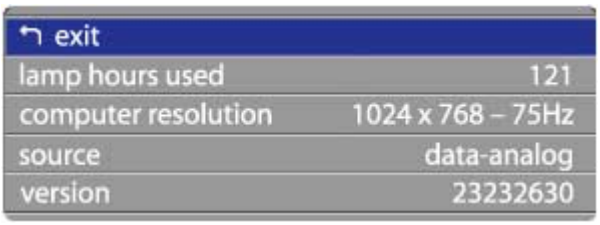


When the download is complete, the FlashUSB dialog box closes, and the projector lamp lights. The Toshiba splash screen appears.

Confirm the software upgrade

1. On the projector keypad, press the **menu** button to display the menus
2. Press the **resync** button until the Status window opens.

   The new software version number appears in the Status window.



   Here is how to interpret the version number in the example above. The version number is really a list of the HEX files version numbers. (See the illustration in step 7. The version numbers are listed with the selected HEX files in the File List box in the FlashUSB dialog box.)

   In the illustration above:

   23 = boot code v2.3
   23 = data configuration v2.3
   26 = GUI code v2.6
   30 = ROM code v3.0

   The version number you see should match the series of version numbers for each HEX file in the file you downloaded from the InFocus/Toshiba web site.

Performing Functional Tests on the TDP-P4

You perform the functional tests after you've repaired the projector to make sure all components of the projector operate properly. You can also perform the functional tests if you're having trouble determining what is wrong with the projector. For additional help in diagnosing trouble with the projector, see Troubleshooting on page 76.

Required equipment

Equipment	Notes
Video player	Make sure the video player has an S-video Out port and cables. The player should also have a Composite video output port (RCA). Toshiba strongly suggests you use a DVD player to test the video quality. DVD players reproduce colors better and project sharper images. The least preferable is a VCR. If you must use a VCR, make sure you use a commercially produced recording, not one recorded from a broadcast source. The VCR must include an S-video connector in addition to a composite connector.
Commercially produced video	You'll need the video in DVD, laser disc, or video cassette format. Toshiba strongly suggests you use *Video Essentials, Optimizing Your Audio/Video System* (DVD International, 1997). This is available at Amazon.com.
Audio & Video cables	Use the cables that come with the projector, including the Digital Video Interface (DVI) cable.
RGB test screens	Use the Test Patterns available at the Toshiba section of the InFocus web site to check image quality.
PC multimedia presentation	For example, you can use a PowerPoint presentation with sound, photographs, graphics and .avi files.

Remote control	Ensure that the remote has fresh AA batteries.
Projection screen	Use a flat screen, not a curved one.
PC with digital video and sound card	Make sure the card has an M1 Digital Video Interface (DVI) output port. The stereo audio card should have either a 3.5mm stereo audio jack or RCA left and right output ports. The computer must have a CD-ROM and must have outputs for RGBHV, VESA, M1 Analog and M1 Digital.

Before beginning

Make sure the work surface where you perform the functional tests is level and clean. Place the projector on a soft surface (such as an anti-static mat) when running the tests.

Connect the following to the I/O panel on the projector:

- Video player through Composite Video and S-video ports
- Computer through M1A cable

Perform the following tests

Test	Verification
Power Up Connect AC power, and turn the unit on.	Verify that the proper splash (logo) screen appears. Verify image quality.
Cosmetics and mechanicals Adjust the projector so that the image is square. Make sure the lens is at a 90° angle to the wall.	Verify that the elevator and leveling foot are functional. Verify that the focus and zoom rings operate properly. Verify cosmetics.
Composite video from video source On the **keypad**, press the **Video** button.	Verify that the video automatically synchronizes. Verify there is no distortion, noise or other abnormalities.

S-Video from video source **1** Connect the S-VIDEO cable to the projector. **2** Disconnect Yellow composite (RCA) video connector.	Verify that the video automatically synchronizes. Verify there is no distortion, noise or other video abnormalities.
Software Version / Standby / Reset All **1** Press the **Menu** button. Navigate to the **Status** menu. Check the software version. **2** Navigate to the **Display** menu. Select **Reset All**. **3** Press the **Standby** button on the keypad.	Verify software version. Verify the keys are not sticky. Verify unit goes in and out of standby mode.
The next step is to observe 3 computer images. These will confirm that the computer input works properly, and will test image quality. Press the **Computer** button on the keypad.	Verify that the images project synchronize properly through the following inputs: M1 Analog M1 Digital

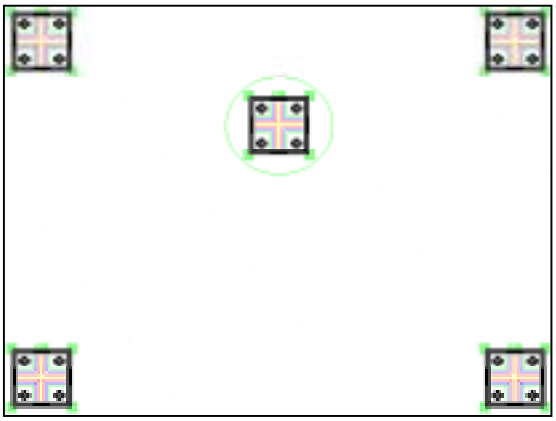
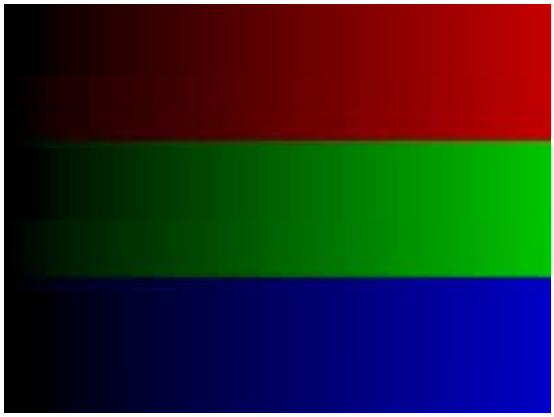
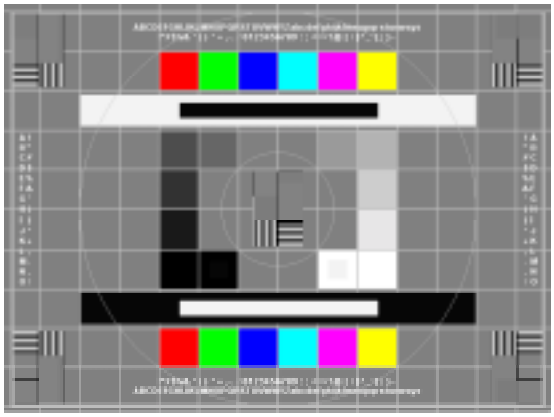
Image #1: Focus Test Image **1** Turn off any local light. **2** Turn the **zoom ring** to make the smallest image. **3** Focus the image so the middle icon is clearly focused. **4** Focus the image on the 4 green squares. **5** After focusing on the green squares on the middle icon, turn the **zoom ring** to make the largest image, then repeat the focus tests.	 Verify that all four corner icons have clear resolution Verify that the white space is visible on all 5 bar/line icon areas (between green). Verify that the image focuses through the full zoom range. Verify that the image remains in focus when the Image Shift knob is turned.
Image #2: Color Ramp Project the Color Ramp image.	 Verify there are no missing parts of the ramp. Verify that the bars are not flashing. Verify that the transitions from light to dark are smooth and gradual.

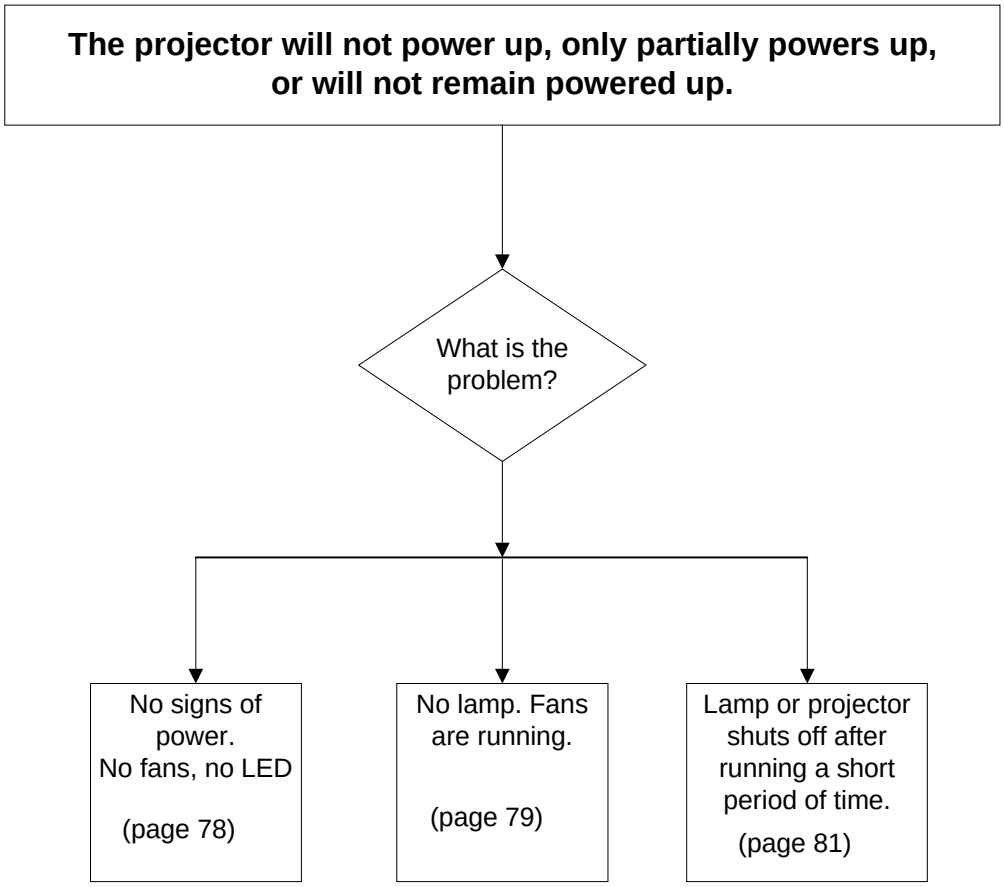
Image #4: SMPTE133 Project the SMPTE133 image.	 Verify that there are no noise, tint, duplicating columns, or other general image abnormalities present
On the keypad, press **Menu**. On the **Display menu**, select **Reset All**.	Verify that the image synchronizes.
Power Down After all tests are complete turn the power off and disconnect all cables. Attach the lens cap.	Verify unit is powered off before disconnecting cables.

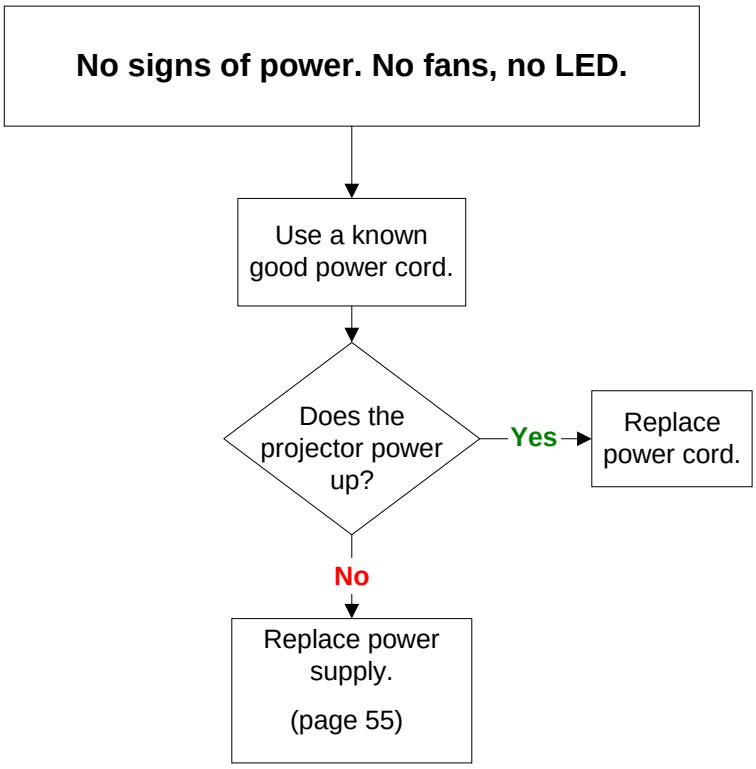
Troubleshooting

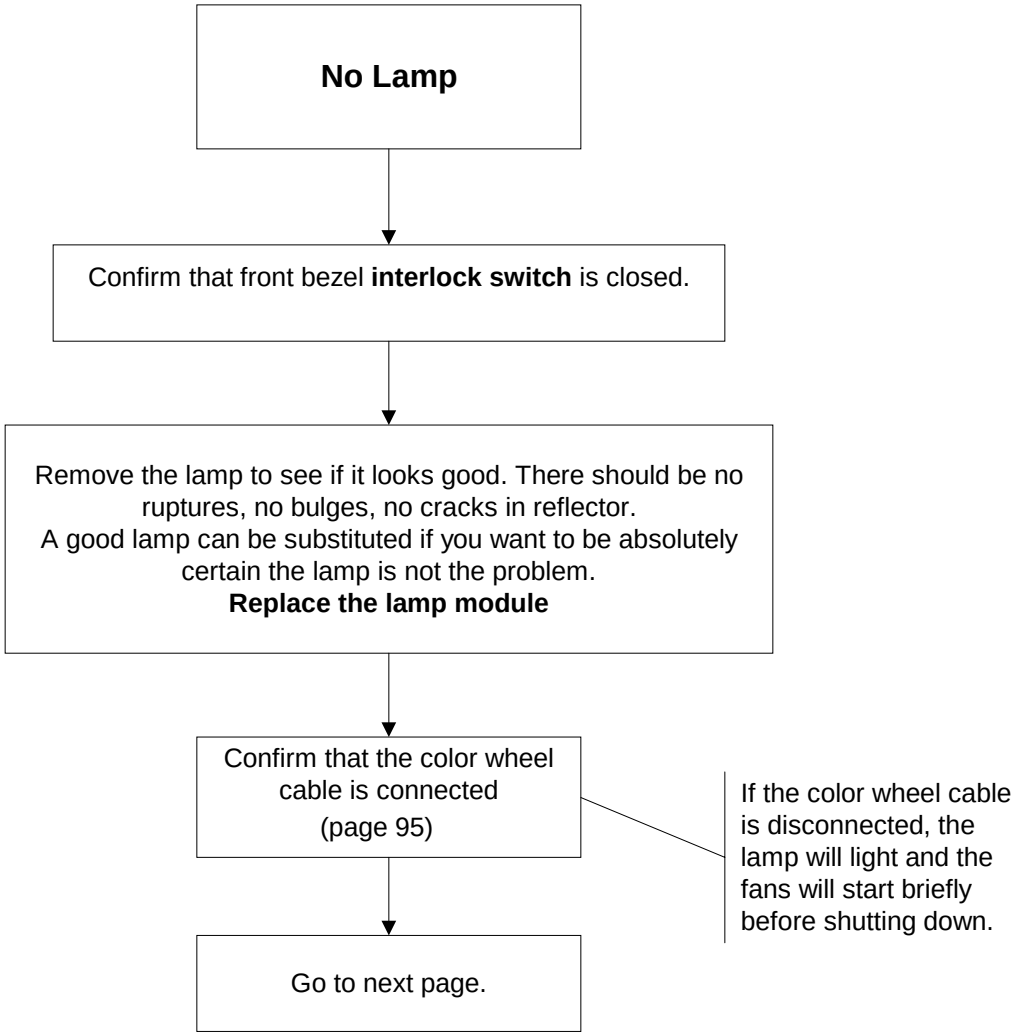
This section includes:

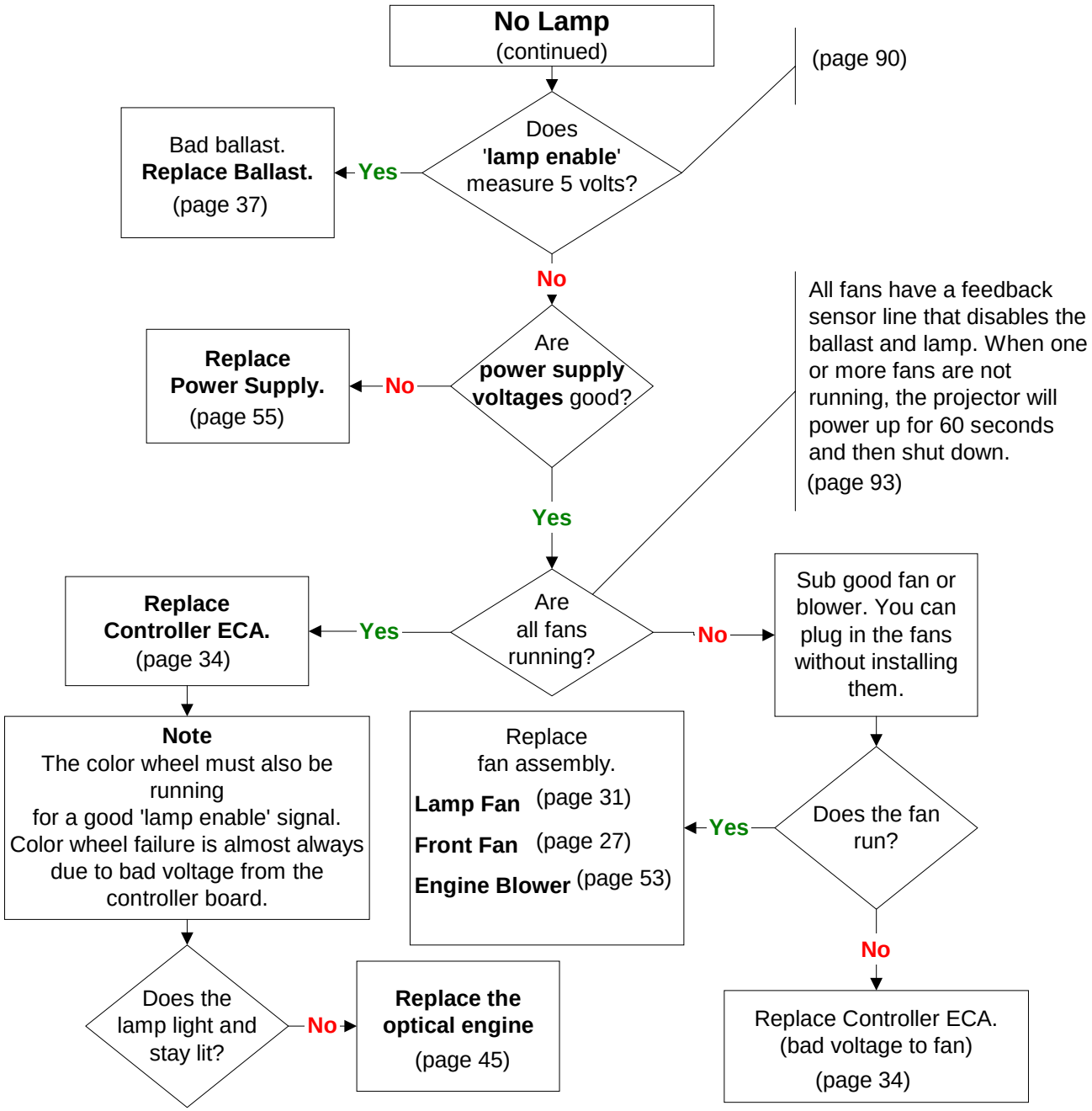
- Troubleshooting trees that help you diagnose problems with the projector
    - a Power problems (page 77)
    - b Image problems (page 82)
    - c Remote problems (page 86)
    - d Keypad problems (page 87)
    - e No menu (page 88)
- A system/controller ECA block diagram (page 89)
- Voltage check points on the controller ECA (page 90)
- Powering up the projector with the top case removed (page 91)
- Checking fan operation (page 93)

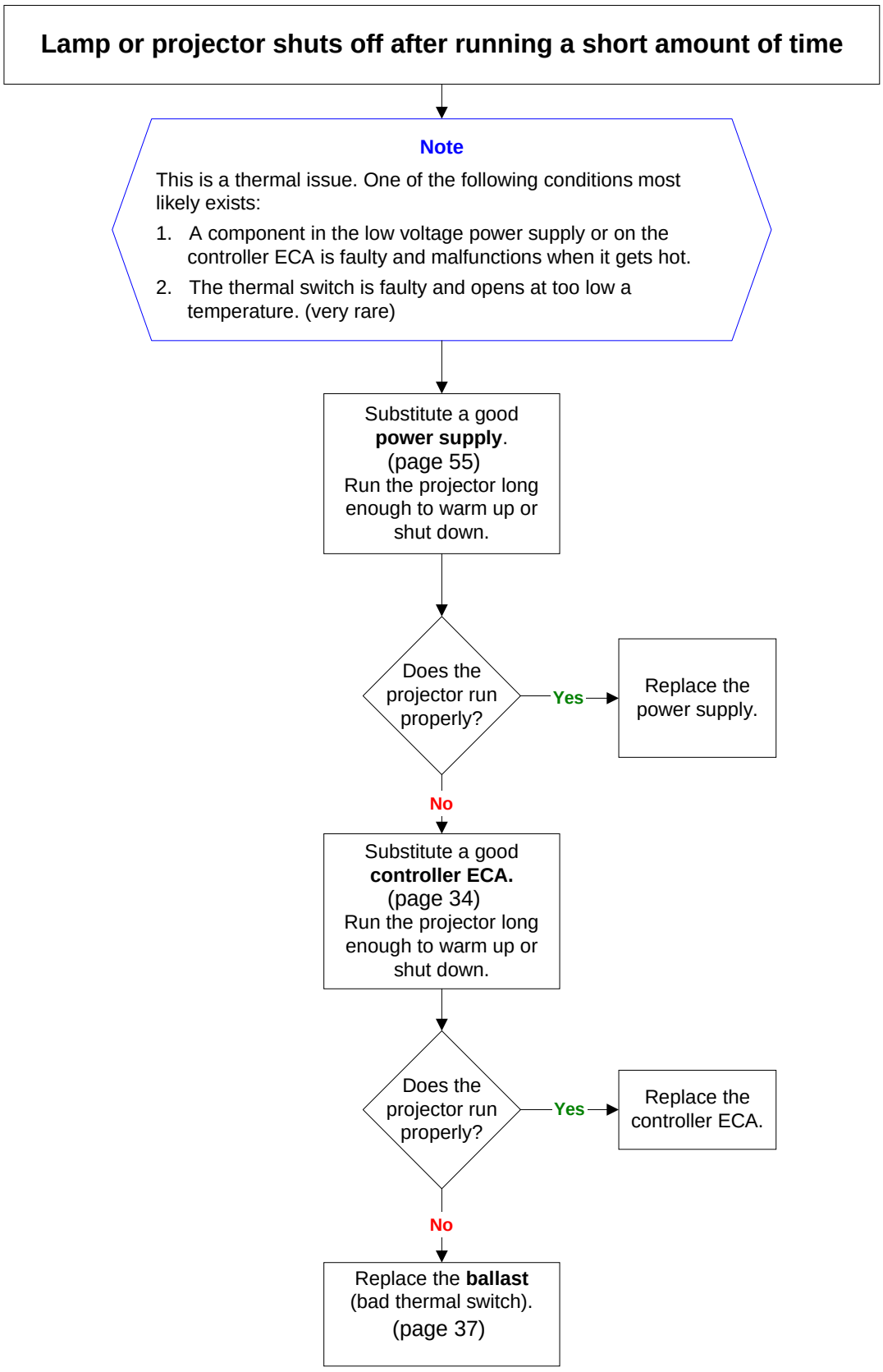
Troubleshooting Power Problems


The projector will not power up, only partially powers up, or will not remain powered up.
What is the problem?
No signs of power.
No fans, no LED
(page 78)
No lamp. Fans are running.
(page 79)
Lamp or projector shuts off after running a short period of time.
(page 81)

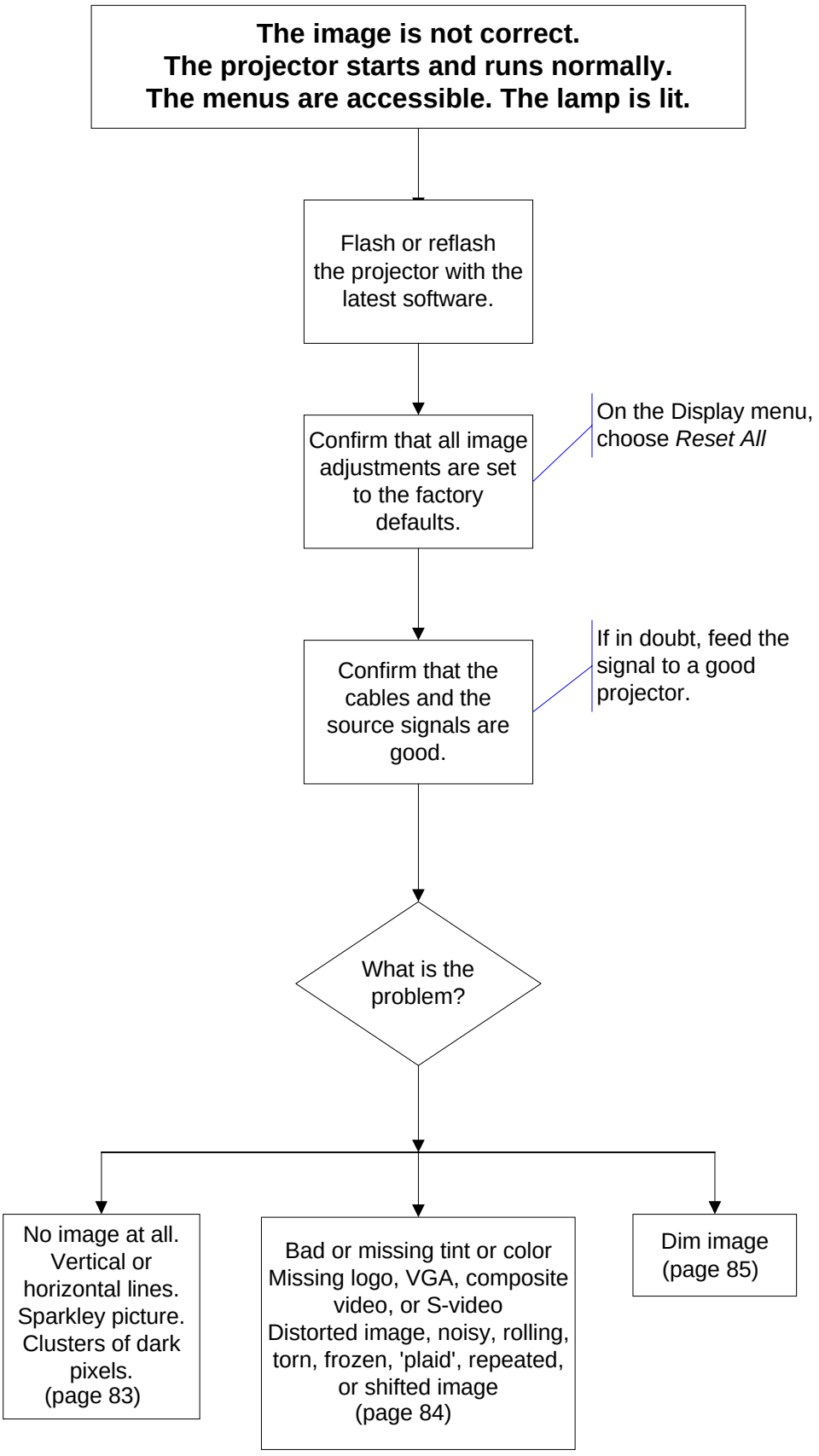

No signs of power. No fans, no LED.
Use a known good power cord.
Does the projector power up?
Yes
Replace power cord.
No
Replace power supply.
(page 55)

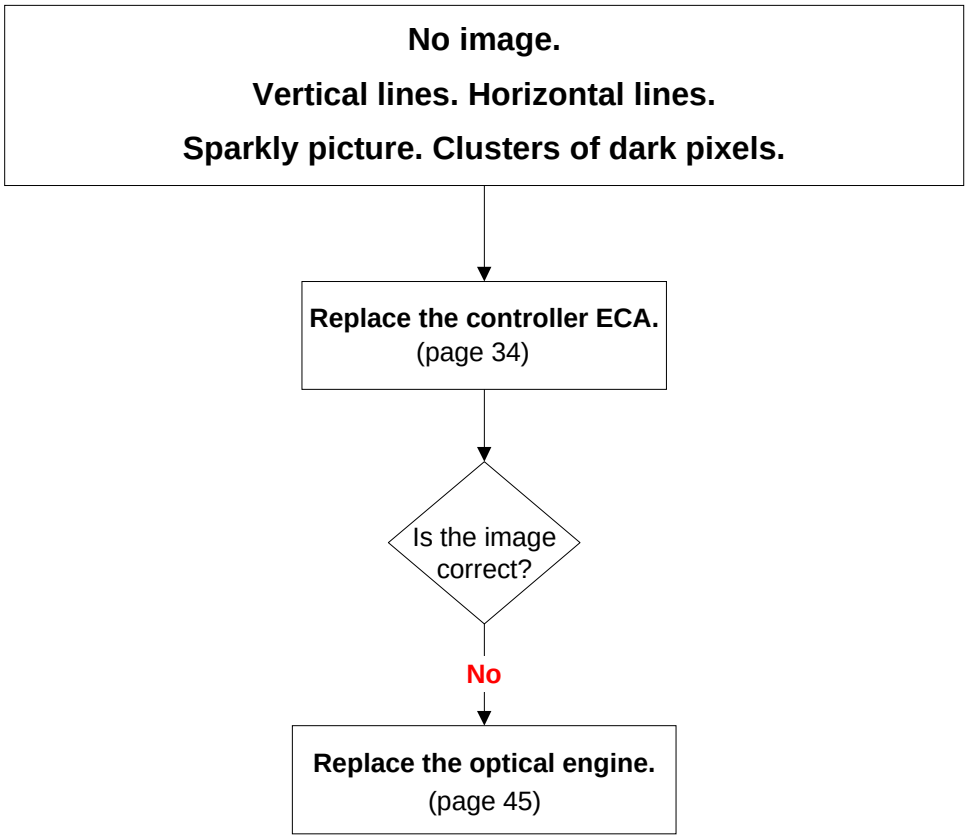

No Lamp
Confirm that front bezel **interlock switch** is closed.
Remove the lamp to see if it looks good. There should be no ruptures, no bulges, no cracks in reflector.
A good lamp can be substituted if you want to be absolutely certain the lamp is not the problem.
Replace the lamp module
Confirm that the color wheel cable is connected
(page 95)
If the color wheel cable is disconnected, the lamp will light and the fans will start briefly before shutting down.
Go to next page.

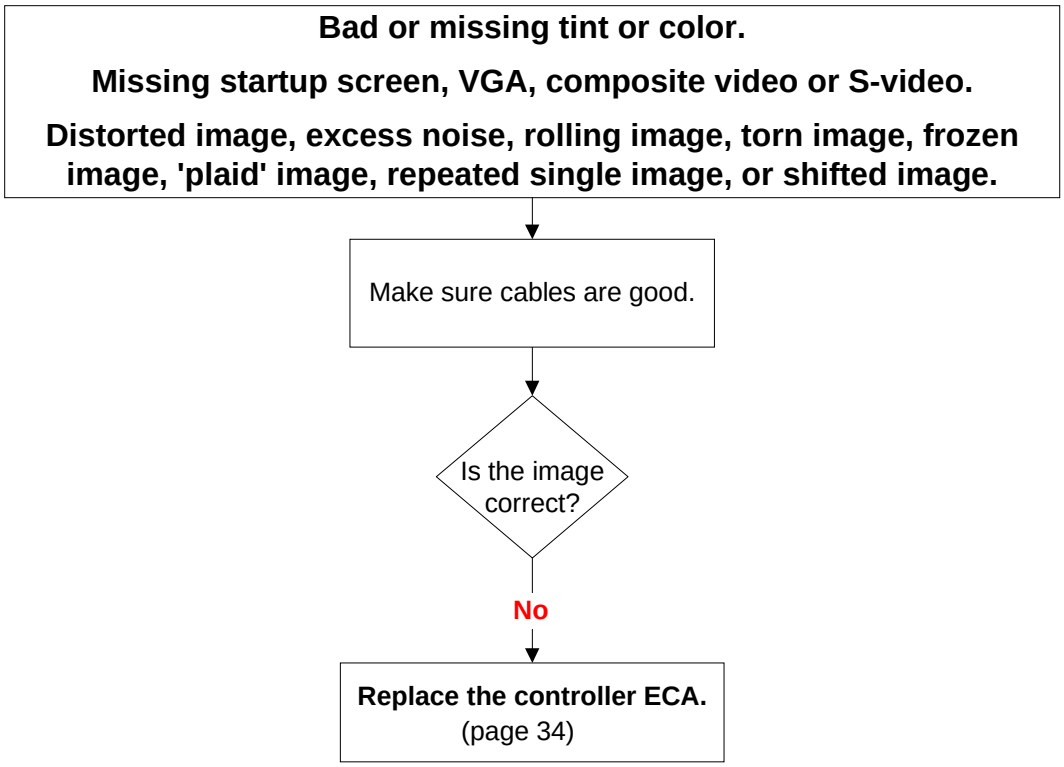

No Lamp
(continued)
(page 90)
Does
'lamp enable'
measure 5 volts?
Yes
Bad ballast.
Replace Ballast.
(page 37)
No
Are
power supply
voltages good?
No
Replace
Power Supply.
(page 55)
All fans have a feedback sensor line that disables the ballast and lamp. When one or more fans are not running, the projector will power up for 60 seconds and then shut down.
(page 93)
Yes
Are
all fans
running?
Yes
Replace
Controller ECA.
(page 34)
No
Sub good fan or blower. You can plug in the fans without installing them.
Note
The color wheel must also be running
for a good 'lamp enable' signal.
Color wheel failure is almost always due to bad voltage from the controller board.
Replace
fan assembly.
Lamp Fan (page 31)
Front Fan (page 27)
Engine Blower (page 53)
Yes
Does the fan run?
No
Does the
lamp light and
stay lit?
No
Replace the
optical engine
(page 45)
Replace Controller ECA.
(bad voltage to fan)
(page 34)


Lamp or projector shuts off after running a short amount of time
Note
This is a thermal issue. One of the following conditions most likely exists:
1. A component in the low voltage power supply or on the controller ECA is faulty and malfunctions when it gets hot.
2. The thermal switch is faulty and opens at too low a temperature. (very rare)
Substitute a good power supply. (page 55) Run the projector long enough to warm up or shut down.
Does the projector run properly?
Yes
Replace the power supply.
No
Substitute a good controller ECA. (page 34) Run the projector long enough to warm up or shut down.
Does the projector run properly?
Yes
Replace the controller ECA.
No
Replace the ballast (bad thermal switch). (page 37)

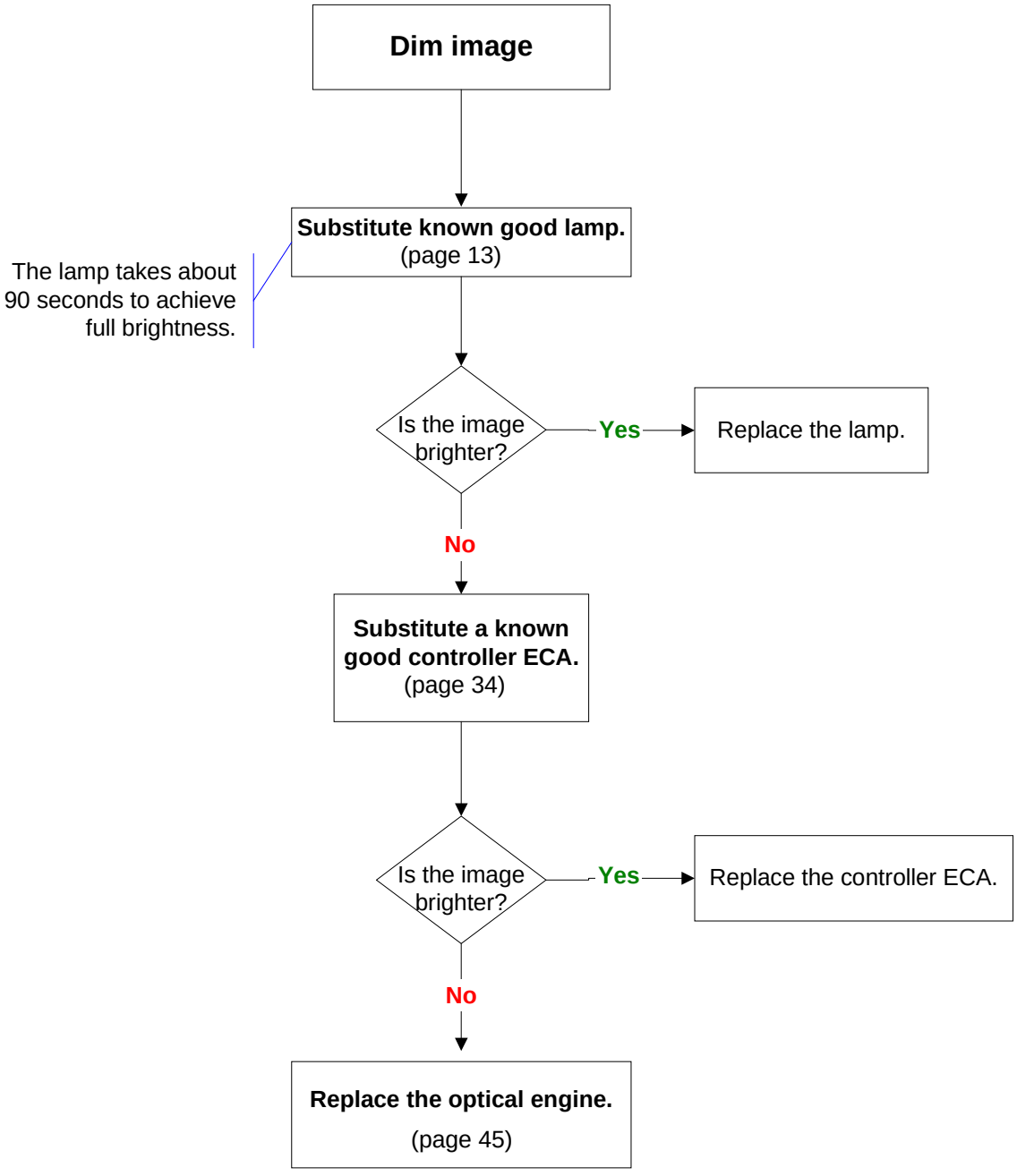
Troubleshooting Image Problems


The image is not correct.
The projector starts and runs normally.
The menus are accessible. The lamp is lit.
Flash or reflash the projector with the latest software.
Confirm that all image adjustments are set to the factory defaults.
On the Display menu, choose *Reset All*
Confirm that the cables and the source signals are good.
If in doubt, feed the signal to a good projector.
What is the problem?
No image at all.
Vertical or horizontal lines.
Sparkley picture.
Clusters of dark pixels.
(page 83)
Bad or missing tint or color
Missing logo, VGA, composite video, or S-video
Distorted image, noisy, rolling, torn, frozen, 'plaid', repeated, or shifted image
(page 84)
Dim image
(page 85)

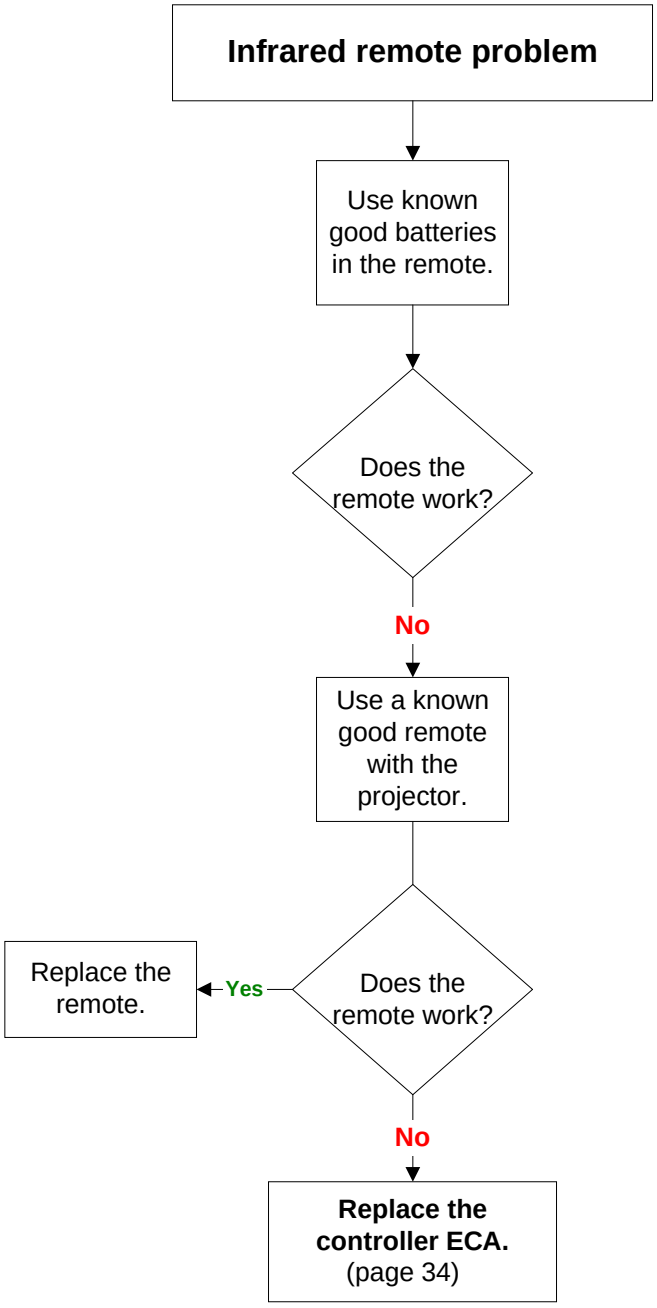

No image.
Vertical lines. Horizontal lines.
Sparkly picture. Clusters of dark pixels.
Replace the controller ECA.
(page 34)
Is the image correct?
No
Replace the optical engine.
(page 45)


Bad or missing tint or color.
Missing startup screen, VGA, composite video or S-video.
Distorted image, excess noise, rolling image, torn image, frozen image, 'plaid' image, repeated single image, or shifted image.
Make sure cables are good.
Is the image correct?
No
Replace the controller ECA.
(page 34)

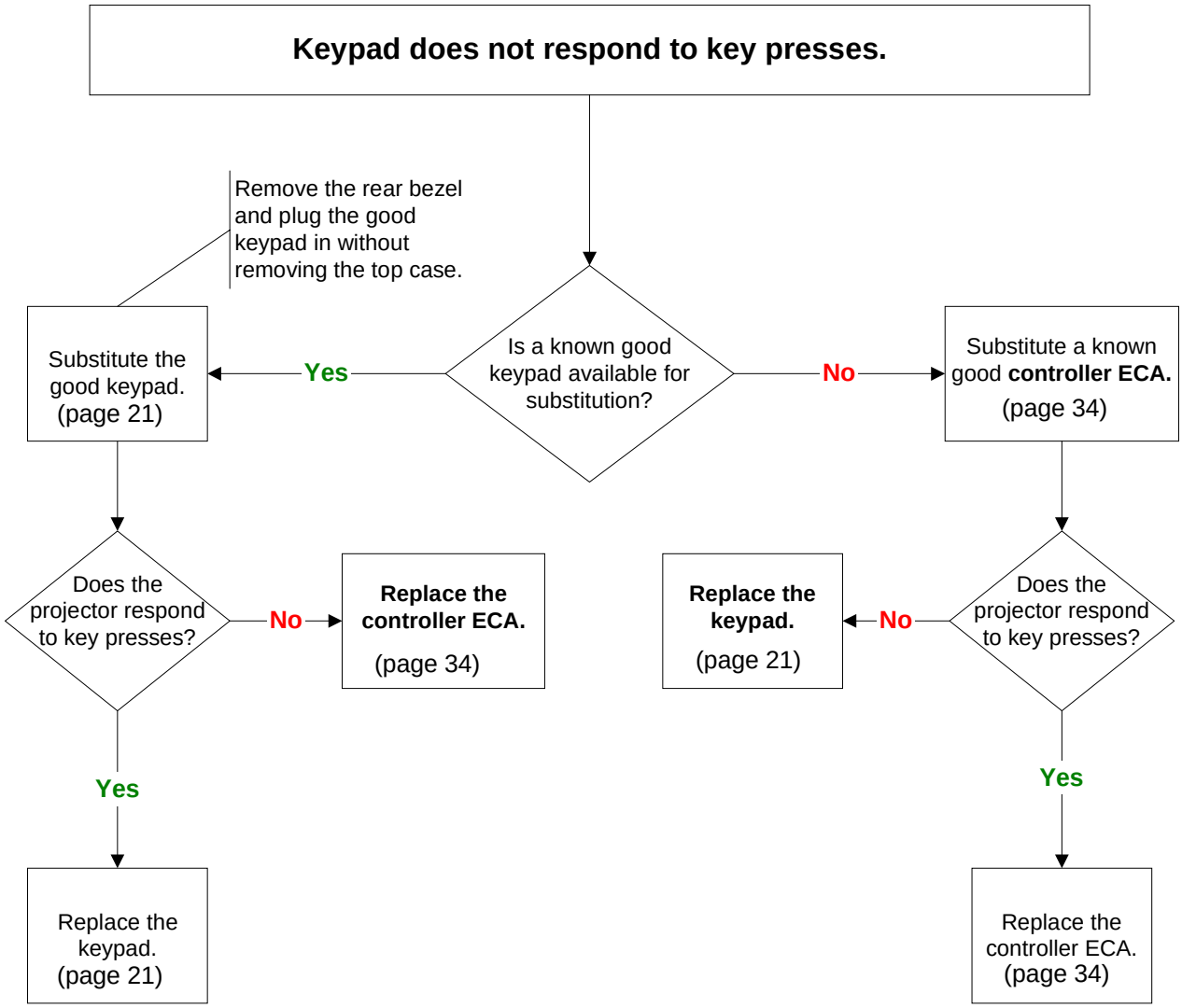
(page 32)


Dim image
Substitute known good lamp.
(page 13)
The lamp takes about 90 seconds to achieve full brightness.
Is the image brighter?
Yes
Replace the lamp.
No
Substitute a known good controller ECA.
(page 34)
Is the image brighter?
Yes
Replace the controller ECA.
No
Replace the optical engine.
(page 45)

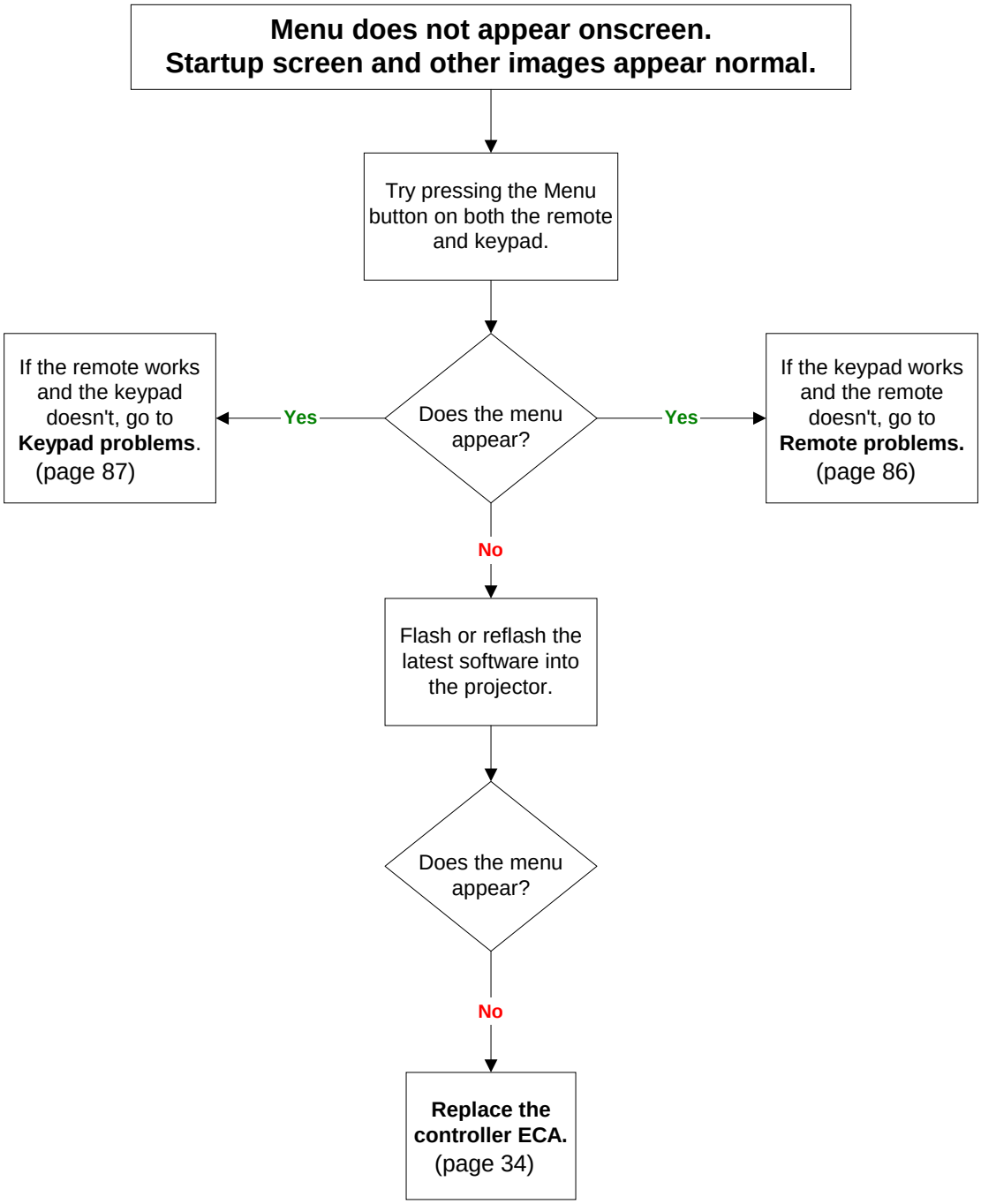
Troubleshooting Remote Problems



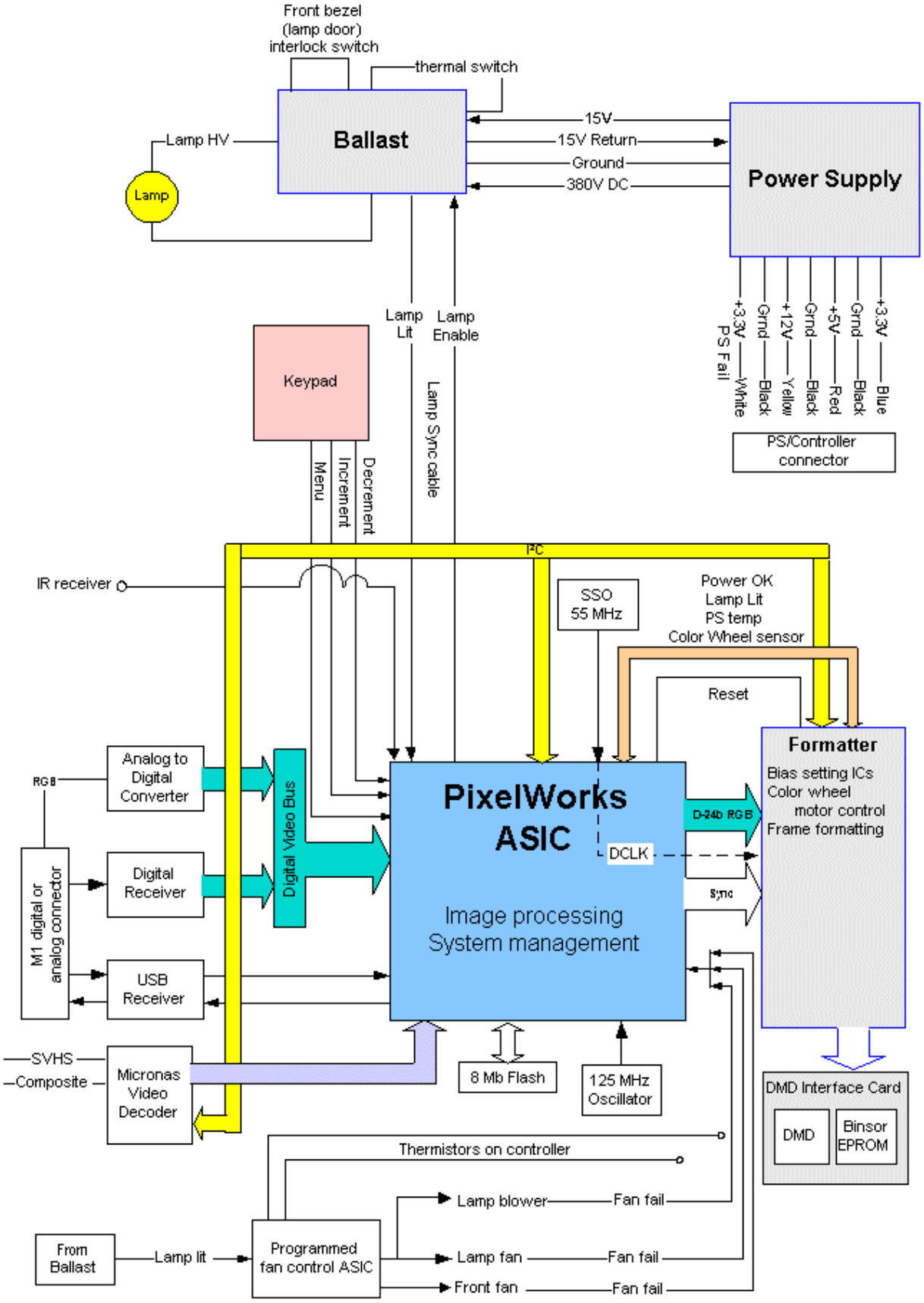
Troubleshooting Keypad Problems


Keypad does not respond to key presses.
Remove the rear bezel and plug the good keypad in without removing the top case.
Is a known good keypad available for substitution?
Yes
No
Substitute the good keypad. (page 21)
Substitute a known good **controller ECA.** (page 34)
Does the projector respond to key presses?
No
Replace the controller ECA. (page 34)
Replace the keypad. (page 21)
Does the projector respond to key presses?
No
Yes
Yes
Replace the keypad. (page 21)
Replace the controller ECA. (page 34)

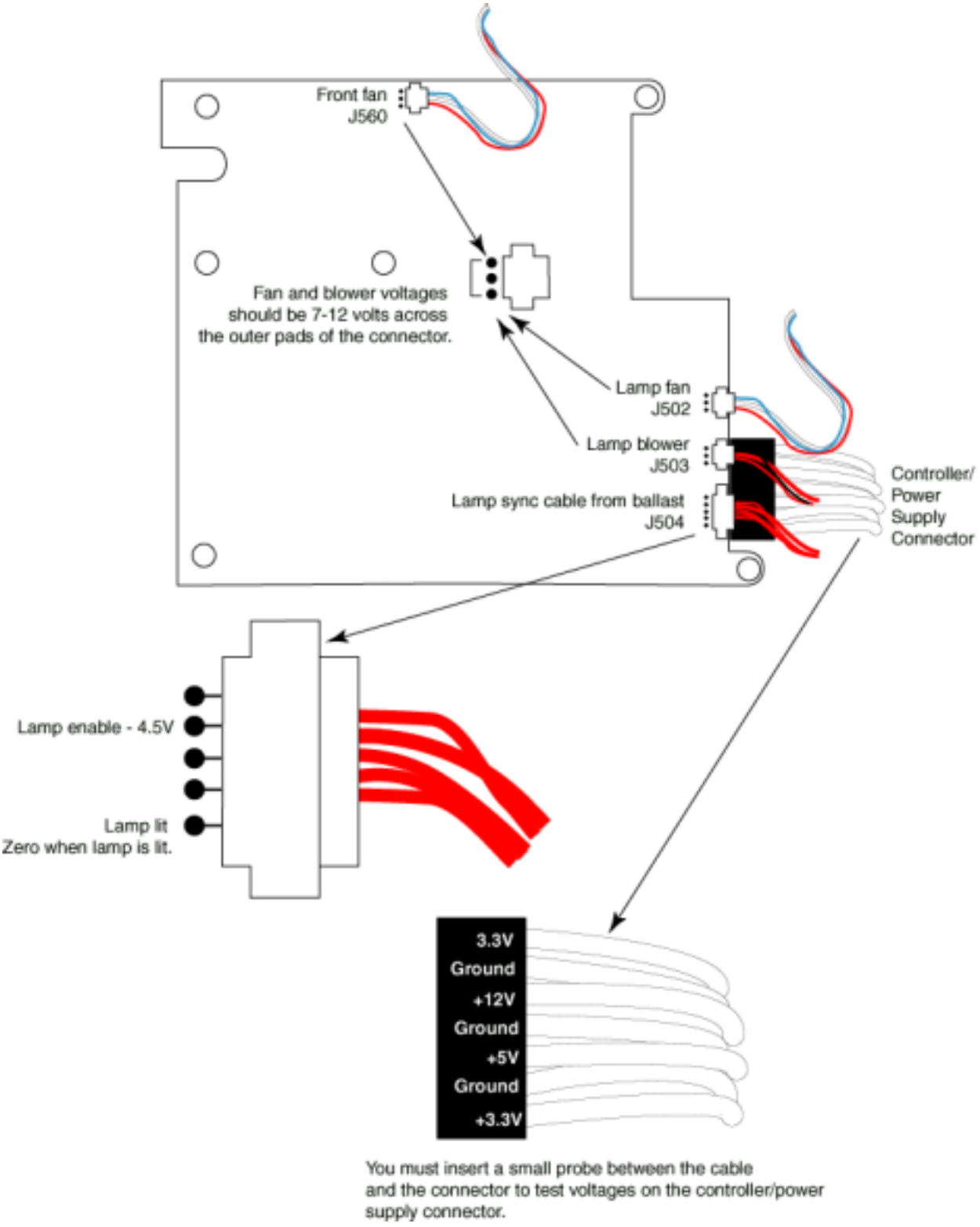
Troubleshooting Menu Problems


Menu does not appear onscreen.
Startup screen and other images appear normal.
Try pressing the Menu button on both the remote and keypad.
Does the menu appear?
Yes
If the remote works and the keypad doesn't, go to **Keypad problems**. (page 87)
Yes
If the keypad works and the remote doesn't, go to **Remote problems.** (page 86)
No
Flash or reflash the latest software into the projector.
Does the menu appear?
No
Replace the controller ECA. (page 34)

Block Diagram



Controller voltages



Power Up with the Top Case Removed

To check voltages and fans, you need to power the projector up with the top case removed.

CAUTION When you power the projector up, there is voltage present on the controller ECA, power supply and ballast. Be very careful where you probe and where you touch.

1 Remove the following parts:

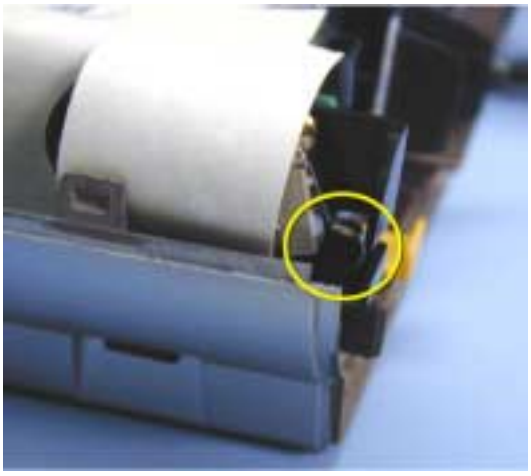
Front bezel (see page 11)

NOTE If you only want to check the interlock switch, remove the front bezel, then refer to the pictures below for the location of the switch.

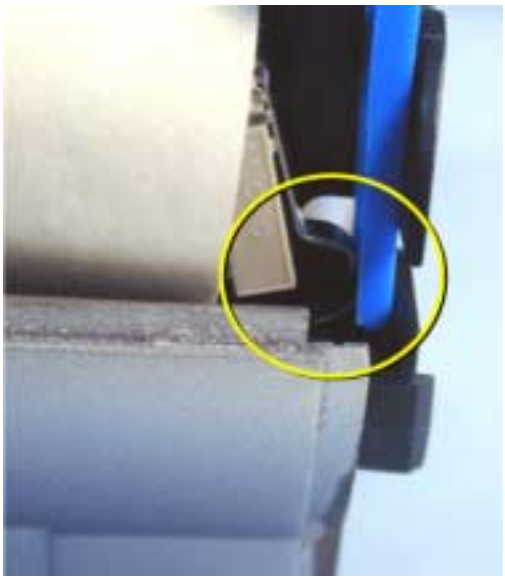
Rear Bezel (see page 15)

Top case (see page 18)

Once the top case is off, you have access to the interlock switch on the front of the ballast.



2 Defeat the interlock switch with a nylon screwdriver or spacer.



3 Power up the projector

Checking Fans and Blower Operation

To check the two fans and the lamp blower, do the following:

1. Remove the following parts:

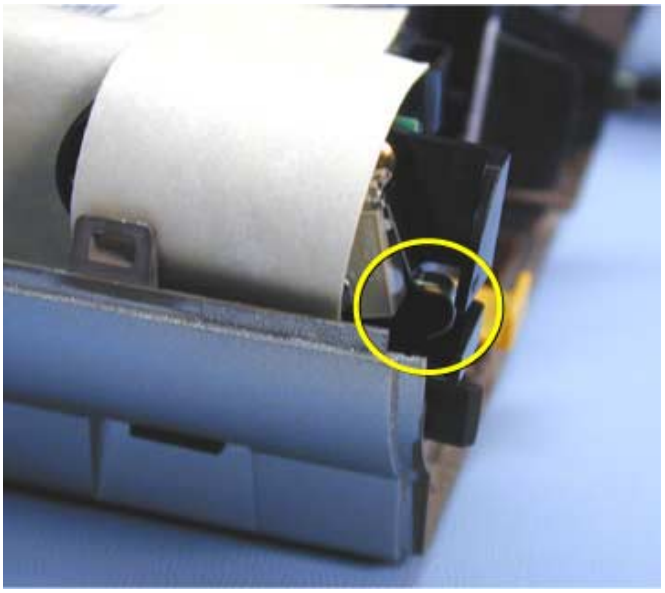
   Front bezel (see page 11)

   Rear Bezel (see page 15)

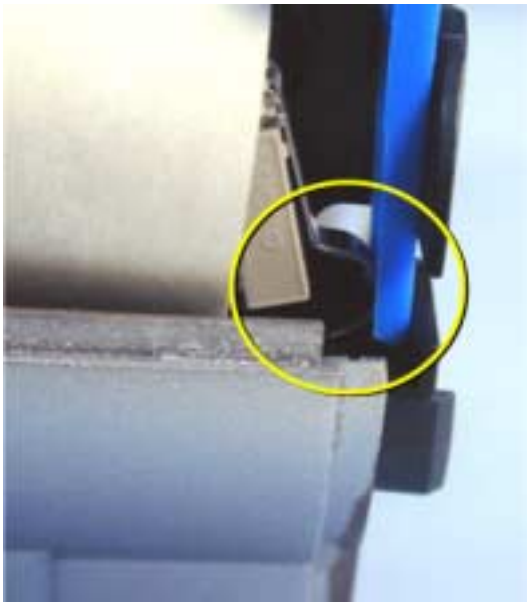
   Top case (see page 18)

   Lamp module (see page 13)

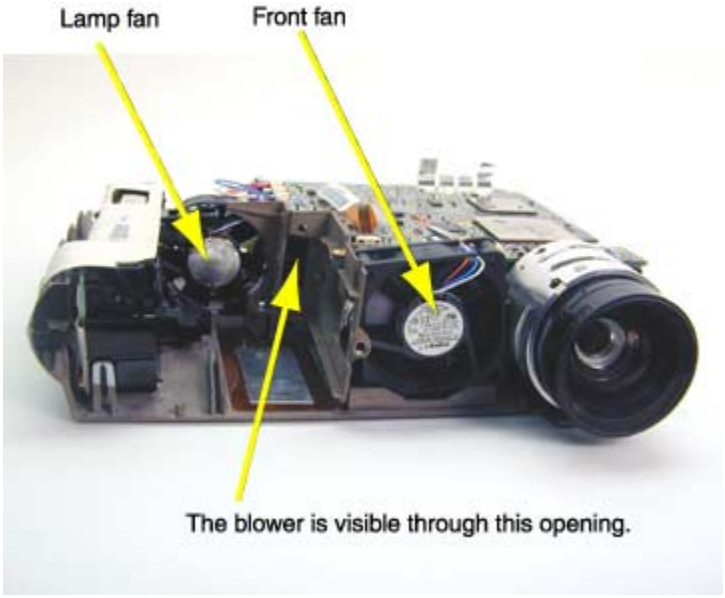
   Once the top case is off, you have access to the interlock switch on the front of the ballast.



2. Defeat the interlock switch with a nylon screwdriver or spacer.



3 Plug the projector in and turn it on. The fans and blower start up and run for 2- 3 seconds, then shut down (because there is no lamp installed). This is time enough to make sure the fans and blower run properly.

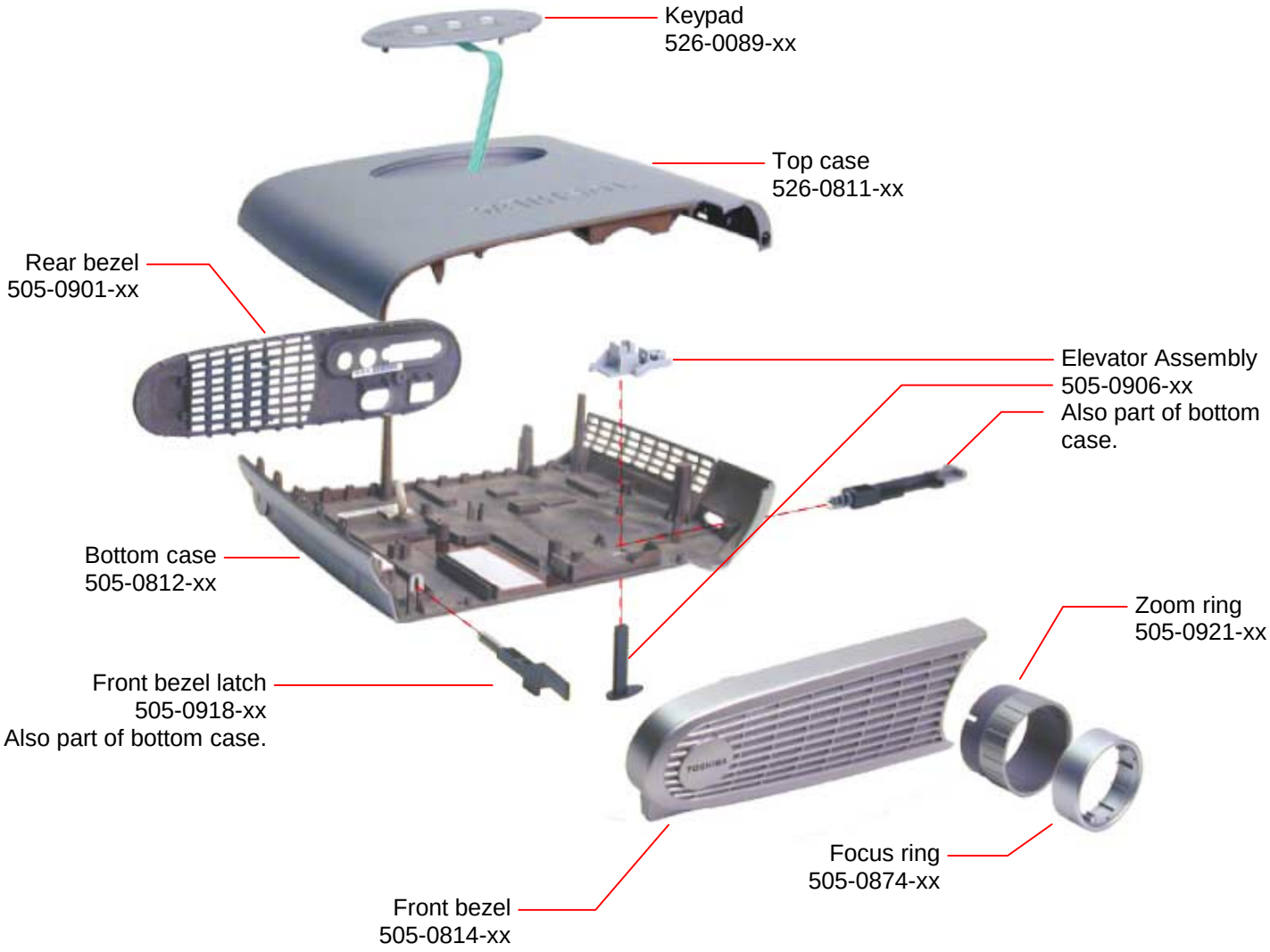


Make sure the color wheel cable is connected

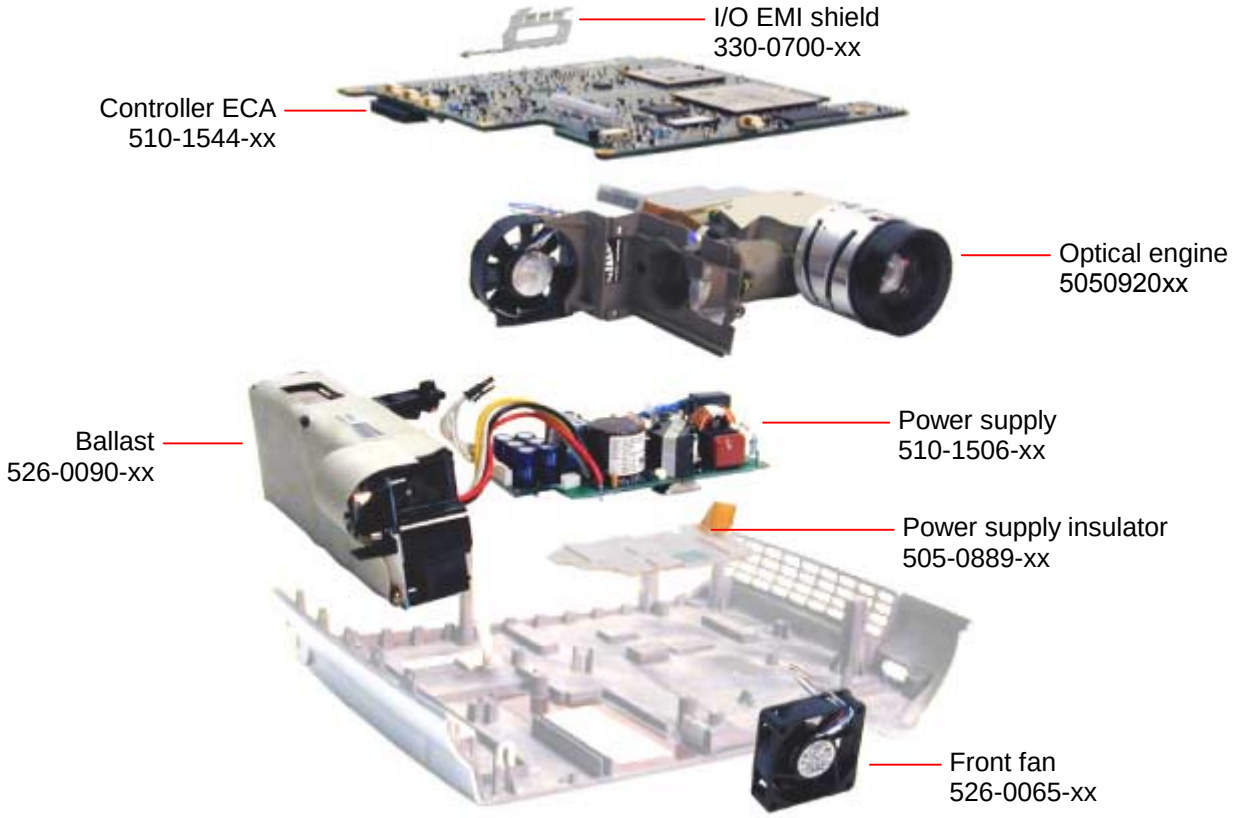
The color wheel cable must be fully inserted into its ZIF connector. To check the connection, hold the cable with a tweezers and gently tug on it. The cable should not move. If the cable moves in and out or side to side in the connector, it probably is not making good contact. Release the latch, re-insert the ribbon cable, then tighten the latch.

Parts Lists

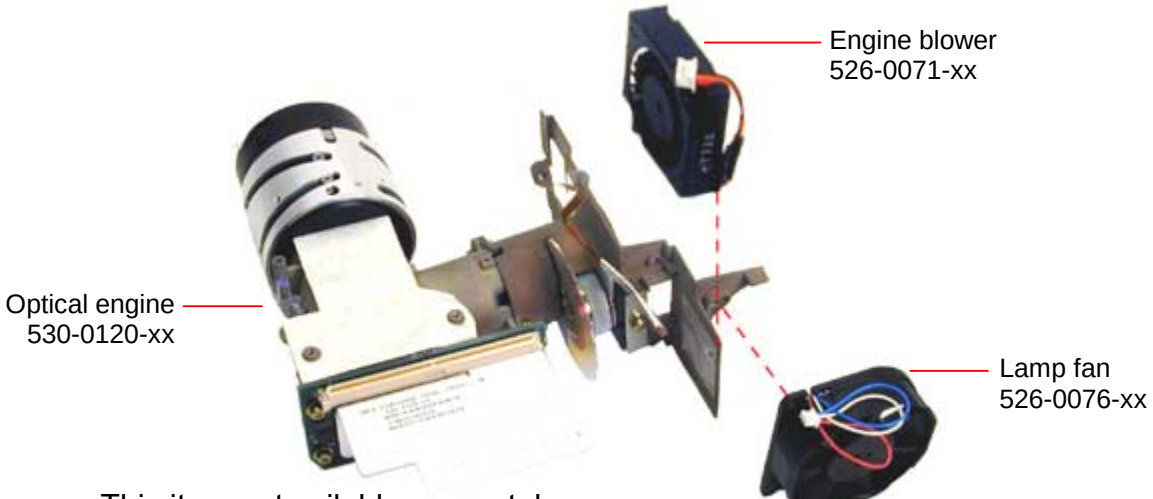
Case Parts Exploded View



Component Exploded View



Optical Engine Exploded View



This item not avilable separately

Order 5050920xx

Replaceable Parts

Below is a numerically arranged list of parts in the TDP-P4.

Part Number	Part Name	Notes
020-1077-xx	Label, Certification, TDP-P4	
211-0155-xx	Lamp sync cable	
328-0128-xx	Foot, rubber	Two required for bottom case
329-0285-xx	Die cut tape	Required when replacing the engine blower.
330-0700-xx	I/O shield	
505-0713-xx	Cap, lens	
505-0811-xx	Case, top	Includes new top case and ballast gasket
505-0812-xx	Case, bottom	Includes new bottom case, certification label and ballast gasket
505-0814-xx	Bezel, front	
505-0874-xx	Ring, focus	
505-0889-xx	Power supply insulator	Fits between power supply and bottom case
505-0901-xx	Bezel, rear	
505-0906-xx	Elevator assembly	Includes elevator shaft, actuator and housing.
505-0918-xx	Latch, front bezel	
505-0920-xx	Optical engine kit	Includes new optical engine and controller/engine gasket.
505-0921-xx	Ring, zoom	
505-0933-xx	Fan, lamp	50mm fan fastens to the optical engine, and may be replaced separately.
510-1506-xx	Power supply	
510-1544-xx	Controller ECA Kit	Includes controller ECA and color wheel cover.
526-0065-xx	Fan, front	
526-0071-xx	Blower, optical engine	30mm blower fastens to the optical engine, and may be replaced separately.
526-0089-xx	Keypad	
526-0090-xx	Ballast Kit	Includes ballast gasket.
802-0025-xx	Fastener Kit	Includes all fasteners necessary to attach each part in the TDP-P4 projector.
SP-LAMP-LP1	Lamp Module	

Standard Accessories

Accessory	Part Number	Notes
Quick Start Card	**009-0565-xx**	
User's Guide	**010-0269-xx**	
User's Guide (CD-ROM)	**010-0272-xx**	
Soft Case	**110-0388-xx**	
Executive Remote with Keystone	**590-0389-xx**	
Lamp Module	**505-0685-xx**	Installed in projector.
Analog Cable	**210-0185-xx**	Analog M1-A to USB and VGA cable
SVHS Cable	**210-0125-xx**	MD4 to MD4
RCA Video Cable	**210-0176-xx**	
MAC Adapter	**515-0045-xx**	
Lens Cap	**505-0816-xx**	
Lens Cap Tether	**321-0170-xx**	
North American Power Cord	**210-0023-xx**	
Australian Power Cord	**210-0027-xx**	
British Power Cord	**210-0028-xx**	
European Power Cord	**210-0029-xx**	
Danish Power Cord	**210-0030-xx**	
Swiss Power Cord	**210-0031-xx**	
Japanese Power Cord	**210-0127-xx**	

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